S. 2. A.

LIBRARY OF THE NEW YORK ACADEMY OF MEDICINE
A.M. RUDOLPH AUGUST WITTHAUS M.D.
1846
1913
This volume has been purchased for the Library of the New York Academy of Medicine
from the Proceeds of the Rudolph August WITTHAUS FUND

Virginia Medical Monthly

Official Organ of the Medicial Society of Virginia

Index to Volume XLIX

THE N. Y. ACADEMY OF MEDICINE
JUL 23 1928
124583
LIBRARY

APRIL, 1922--MARCH, 1923

Inclusive

VIRGINIA MEDICAL MONTHLY

INDEX TO VOLUME XLVIII

APRIL, 19 2—MARCH. 19.3 INCLUSIVE

INDEX OF CONTRIBUTORS

DR. JETER R. ALLEN, Marshall, Va. 403
DR. O. T. AMORY, Newport News, Va. 237
DR. JAMES W. ANDERSON, Norfolk, Va. 390
DR. E. J. APPLEWHITE, Newport News, Va. 258
DR. J. F. ARMENTROUT, Roanoke, Va. 539
DR. O. O. ASHWORTH, Richmond, Va. 22
DR. B. B. BAGBY, West Point, Va. 517
DR. NOBLE P. BARNES, Washington, D. C. 366
DR. M. B. BEECROFT, Newport News, Va. 251
DR. NUMA D. BITTING, Durham, N. C. 222
DR. CHARLES MINOR BLACKFORD, Staunton, Va. 339, 425
DR. GEORGE BLUMER, New Haven, Conn. 540
DR. ADDISON G. BRENIZER, Charlotte, N. C. 33
DR. ARTHUR S. BRINKLEY, Richmond, Va. 388, 711
DR. ALEXANDER G. BROWN, Jr., Richmond, Va. 161, 711
DR. GRAFTON TYLER BROWN, Washington, D. C. 188
DR. ROBERT C. BRYAN, Richmond, Va. 363, 721
DRS D. W. & ERNEST S. BULLUCK, Wilmington, N. C. 284
DR. GEO. H. BUNCH, Columbia, S. C. 27
DR. JOSEPH T. BUXTON, Newport News, Va. 53
DR. CHARLES M. BYRNES, Baltimore, Md. 269
DR. R. C. CARNAL, Rochester, N. Y. 645
DR. ESTILL L. CAUDILL, Narrows, Va. 201
DR. WILLIAM EARL CLARK, Washington, D. C. 74
DR. C. C. COLEMAN, Richmond, Va. 180, 301, 641
DR. JOSEPH D. COLLINS, Portsmouth, Va. 14
DR. CHARLES E. CONRAD, Harrisonburg, Va. 705
DR. RUSSELL M. COX, Portsmouth Va. 327
DR. JAMES H. CULPEPPER, Norfolk, Va. 581
DR. WM. EDGAR DARNALL, Atlantic City, N. J. 395
DR. LITTLETON Davis, Roanoke, Va. 25
DR. PAUL DAVIS, Roanoke, Va. 193
DR. R. A. DAVIS, Newport News, Va. 276
DR. R. H. DAVIS, Wilmington, N. C. 284
DR. A. I. DODSON, Richmond, Va. 22, 475
DR. SAMUEL DOWNING, Newport News, Va. 282
SURG. W. F. DRAPER, U. S. Public Health Service 322
DR. J. H. DUNKLEY, Roanoke, Va. 599
DR. JOHN DUNN, Richmond, Va. 528, 633
DR. J. L. EARLY, Saltville, Va.... 595
DR. COURTNEY EDMOND, Clifton Forge, Va. 84
DR. H. R. EDWARDS, Richmond, Va. 566
DR. J. M. EMMETT, Clifton Forge, Va. 437
DR. JOHN BLAIR FITTS, Richmond, Va. 498
DR. ROY K. FLANNAGAN, Richmond, Va. 219, 519
DR. DAVIS FURMAN, Greenville, S. C. 15
W. R. GARDNER, Richmond, Va. 459
DR. E. TRIBLE GATEWOOD, Richmond, Va. 601
DR. JOSEPH F. GEISINGER, Richmond, Va. 656
DR. JAS. W. GIBBON, Charlotte, N. C. 142, 729
DR. JOHN J. GIESEN, Radford, Va. 206
DR. E. G. GILL, Roanoke, Va..337, 474
DR. JOSEPH GOLDBERGER, Washington, D. C. 489
DR. N. J. GOULD, Norfolk, Va. .. 151
DR. CHARLES R. GRANDY, Norfolk, Va. 586
DR. ALFRED L. GRAY, Richmond, Va. 647
DR. ALFRED B. GREINER, Rural Retreat, Va. 135
DR. JAMES K. HALL, Richmond, Va.335
DR. G. G. HANKINS, Phoebus, Va. 262
DR. STEPHEN HARNSBERGER, Warrenton, Va. 397, 672
DR. C. L. HARRELL, Norfolk, Va. 585
DR. GUY R. HARRISON, Richmond, Va. 88
DR G. S. HARTLEY, Clifton Forge, Va. 430
DR. CHAS. C. HASKELL, Richmond, Va. 459
DR. ALLEN T. HAWTHORNE, Harrisonburg, Va. 345
DR. CHAS. M. HAZEN, Richmond, Va. 457
DR. V. M. HICKS, Raleigh, N. C... 332
S. P. HILEMAN, Richmond Va..... 459
DR. EMORY HILL, Richmond, Va. 385, 636
DR. ARTHUR HOOKS, Bristol, Va.-Tenn. 211
DR. J. WILTON HOPE, Hampton, Va. 256
DR. EDMUND J. HORGAN, Washington, D. C. 652
DR. J. SHELTON HORSLEY, Richmond, Va. 100, 718
DR. THEODORE HOUGH, University, Va. 509
DR. A. A. HOUSER, Richmond, Va. 579
DR. G. G. HOWERY, East Radford, Va. 199
DR. THOS. E. HUGHES, Richmond, Va. 726
DR. T. J. HUGHES, Roanoke, Va. 202
DR. J. MORRISON HUTCHESON, Richmond, Va. 279
DR. WINGATE M. JOHNSON, Winston-Salem, N. C. 313
DR. ALFRED P. JONES, Roanoke, Va. 537
DR. CLARENCE PORTER JONES, Newport News, Va. 249
DR. L. LEROY JONES, Portsmouth, Va. 214
DR. WM. JOSEPH JONES, Crozet, Va. 670
DR. HOWARD F. KANE, Washington, D. C. 393
DR. JAMES A. KEIGER, Greensboro, N. C 160
DR. R. P. KELLY, Lynchburg, Va. 215
DR. E. L. KENDIG, Victoria, Va. 91, 311
DR. W. DENNIS KENDIG, Kenbridge, Va. 454
DR. W. W. KERNS, Bloxom, Va... 265
DR. W. E. KILLINGER, Victoria, Va. 469
DR. H. R. M. LANDIS, Philadelphia, Pa. 561
DR. C. S. LAWRENCE, Winston-Salem, N. C. 664
DR. GEORGE B. LAWSON, Roanoke, Va. 195
DR. SOUTHGATE LEIGH, Norfolk, Va. 1, 581
DR. JOHN WESLEY LONG, Greensboro, N. C. 5
DR. H. G. LONGAKER, Newport News, Va. 266
DR. FRANK LONGAN, Newport News, Va. 244
DR. GEORGE MACKENZIE, Philadelphia, Pa. 120
DR. EDWIN M. MANN, Kenbridge, Va. 325
DR. RICHARD MASON, The Plains, Va. 41, 604, 737
DR. G. MADISON MAXWELL, Roanoke, Va. 324
DR. CHARLES H. MAYO, Rochester, Minn. 557
DR. HUNTER H. McGUIRE, Winchester, Va. 348
DR. STUART McGUIRE, Richmond, Va. 125
DR. WILLIAM B. McILWAINE, Petersburg, Va. 700
DR. T. K. McKEE, Saltville, Va. 203
DR. CLIFTON M. MILLER, Richmond, Va. 391
DR. C. O. MILLER, New Market, Va. 450
DR. E. C. L. MILLER, Richmond, Va. 590
DR. W. H. F. MILLER, Clifton Forge, Va. 440
DR. J. COLEMAN MOTLEY, Abingdon, Va. 30
DR. JSOEPH J. MUNDELL, Washington, D. C. 14, 130
DR. THOMAS W. MURRELL, Richmond, Va. 505
DR. JOHN H. NEFF, University, Va. 715
DR. ARTHUR D. OWNBEY, Newport News, Va. 9
DR. JOHN RANDOLPH PAGE, New York, N. Y. 378
DR. M. J. PAYNE, Staunton, Va. 446
DR. R. L. PAYNE, Norfolk, Va. 246
LT. COL. GEORGE PEED, M. C., U. S. A., Fortress Monroe, Va. 240
DR. E. W. PERRY, Lynchburg, Va. 85
DR. W. LOWNDES PEPLE, Richmond, Va. 70
DR. MATTHEW W. PERRY, Washington, D. C. 74
DR. CHARLES A. PFENDER, Washington, D. C. 65
DR. W. M. PHELPS, Staunton, Va. 444
DR. R. L. PITTMAN, Fayetteville, N. C. 81
DR. LANIER D. POLE, Hot Springs, Va. 443
DR. WM. B. PORTER, Roanoke, Va. 140
DR. IVAN PROCTER, Raleigh, N. C. 147
DR. R. L. RAIFORD, Sedley, Va.. 93

DR. B. M. RANDOLPH, Washington, D. C. 351
DR. D. L. RAWLS, Suffolk, Va.... 150
DR. J. E. RAWLS, Suffolk, Va..... 734
DR. JULIAN L. RAWLS, Norfolk, Va. 462, 723
GEORGE F. REDDISH, Ph. D., Richmond, Va. 590
DR. FRANK H. REDWOOD, Norfolk, Va. 503
DR. J. A. RIFFE, Covington, Va.. 433
DR. F. C. RINKER, Norfolk, Va... 727
DR. JOSEPH D. ROGERS, Washington, D. C. 693
DR. LAWRENCE T. ROYSTER, Norfolk, Va. 494
DR. M. PIERCE RUCKER, Richmond, Va. 370, 665
DR. A. H. SANFORD, Rochester, Minn. 605
DR. G. E. de SCHWEINITZ, Philadelphia, Pa. 625
DR. W. M. SHEPPE, University, Va. 380
DR. A. M. SHOWALTER, Cambria, Va. 136
DR. C. AUGUSTUS SIMPSON, Washington, D. C. 122
DR. JAMES H. SMITH, Richmond, Va. 662, 708
DR. P. S. SMITH, Abingdon, Va.. 532
MR. A. H. STRAUS, Richmond, Va. 513
DR. L. E. STUBBS, Newport News, Va. 132
DR. LEWIS H. SWINDEL, Washington, N. C. 98
DR. M. C. SYCLE, Richmond, Va. 155
DR. J. LLOYD TABB, Richmond, Va. 647
DR. E. C. S. TALIAFERRO, Norfolk, Va. 487
DR. DANIEL D. TALLEY, Jr., Richmond, Va. 639
DR. E. H. TERRELL, Richmond, Va. 405, 540
DR. CYRUS THOMPSON, Jacksonville, N. C. 127
DR. MAX THOREK, Chicago, Ill. 343
DR. E. W. TITUS, Washington, D. C. 96
DR. BEVERLEY R. TUCKER, Richmond, Va. 628
DR. J. N. UPSHUR, Richmond, Va. 3
DR. G. K. VANDERSLICE, Phoebus, Va. 262
DR. WARREN T. VAUGHAN, Richmond, Va. 34, 316, 465
DR. ALLEN F. VOSHELL, University, Va. 525
DR. J. B. H. WARING, Blanchester, O. 472
DR. STEPHEN H. WATTS, University, Va. 175
DR. THOMAS WHEELDON, Richmond, Va. 498
DR. JOS. A. WHITE, Richmond, Va. 61, 306
DR. J. WARREN WHITE, Norfolk, Va. 464
DR. ROBERT CAMDEN WHITEHEAD, Norfolk, Va. 523
DR. JAMES M. WHITFIELD, Richmond, Va. 342
DR. R. M. WILEY, Salem, Va... 649
DR. CARRINGTON WILLIAMS, Richmond, Va. 10
DR. ENNION G. WILLIAMS, Richmond, Va. 113, 223
DR. A. MURAT WILLIS, Richmond, Va. 573
DR. SAM WILSON, Lynchburg, Va. 696
DR. THOMAS M. WOOD, National Soldiers Home, Va. 250
DR. FRANK D. WORTHINGTON, Charlotte, N. C. 158
DR. J. T. A. WRIGHT, Nashville, Tenn. 38

INDEX OF SUBJECTS

Italics Indicate Subjects of Original Communications

Abdomen, significance of pain in left side of surgical 81
Abdominal surgical patients, the after-care of, 237; Is progress being made in surgical treatment of acute — conditions? 573; *Importance of early diagnosis of acute—pain* 693
Abscess, lung; report of cases, 53; Report of case of pulmonary — of lower right lobe treated by artificial pneumothorax, 585; Kidney—and pyonephrosis; review of cases 715
Acidophilus bacillus milk in Richmond, notes on therapeutic use of, 590; Studies on therapeutic effect of — — — and lactose, 407; — — 408
Actinomycosis, human 605
After-care of abdominal surgical patients 237
Age to disease in childhood, relation of 313
Anemia, splenectomy in treatment of splenic 652
Anesthesia, regional, 581; Oxygen supply and demand in general — 523
Antrum punch, Maxwell 324
Apinol, the toxicity of 459
Appendiceal conditions, relation of time to mortality in treatment of 734
Appendicitis, rambling remarks in re, 125; *Acute — ; acute salpingitis; acute pyelitis; differential diagnosis*, 158; *Historical note on —* 351
Appendicular liver and kidney with report of cases 98
Arsphenamin and neoarsphenamin, excretion of arsenic after serial administration of 101
Arteriosclerosis 250
Asphyxia, case of traumatic 664
Asthma, protein sensitization in bronchial 188
Auditory nerve and inner ear, two cases of syphilis of the 337
Bacillus acidophilus milk and lactose, studies on therapeutic effect of, 407; — — , 408; Notes on theorapeutic use of — — — in Richmond 590
Banti's disease, malignant tricuspid endocarditis with probable 380
Basal metabolism studies in thyroid disease, the value of 708
Biliary system, transduodenal drainage of, or non-surgical drainage of the gall tract 478
Bismuth salts, treatment of syphilis with, 679; — in treatment of syphilis 739
Bladder, sub-mucous ulcer of 202
Blood pressure in pregnancy, 3; The — supply of the heart, 43; — *sugar* 741
Board of Health, work of State 113

Book Announcements
A. M. A.—Female Weakness Cures; Epilepsy Cures and Treatment; Obesity Cures; The Nostrum and the Public Health, 290; Propaganda for Reform in Proprietary Medicines, 548; Dispensary Service in the U. S. 680
Rockefeller Foundation—Bibliography of Hookworm Disease 477
Cathell—Book on the Physician Himself from Graduation to Old Age 102
Crile—The Thyroid Gland 102
Crossen—Diseases of Women 547
Davis—Impotency, Sterility, and Artificial Impregnation 740
Dorland—American Illustrated Medical Dictionary 102
Dunlap—Elements of Scientific Psychology 477
Fisher—Ophthalmoscopy, Retinoscopy and Refraction 477
Fitzgerald—An Introduction to the Practice of Preventive Medicine 680
Greene—Medical Diagnosis 680
Haden—Clinical Laboratory Methods 740
Harrower—Practical Organotherapy 102, 547
Hazen—Diseases of the Skin 352
Hertzog—Werther—The Female Impersonators 547
Hill—Practical Infant Feeding 102, 164
Johns Hopkins Hospital Reports 290
MacCarthy—The Healthy Child from Two to Seven 102
MacLeod—Physiology and Biochemistry in Modern Medicine 547
Mayo—Collected Papers of the Mayo Clinic 290
Metzger—Principles and Practice of X-Ray Technic of Diagnosis 352
Mix—Practical Medicine Series, Vol. I, General Medicine 352
Moore-Ferguson—Nutrition of Mother and Child, with Menus and Recipes 740
Peters—Applied Chemistry 290
Porter—The Management of the Sick Infant 102
Pottenger—Symptoms of Visceral Disease 229
Potter—Place of Version in Obstetrics 102, 413
Reed—The Law of Vital Transfusion and the Phenomenon of Consciousness 164
Rose—Physical Diagnosis 547
Scott—Hughes' Practice of Medicine 352
Simpson—Radium Therapy 102, 414
Stevens—A Practice of Medicine 229
Stout—The Eighteenth Amendment and the Part Played by Organized Medicine 164
Tompkins—Medical Annals of Roanoke, Va. 419
Trans. Amer. Ped. Society 229, 414
Trans. Col. Phys. of Phila. 414
Vaughan—Influenza 289
Williams—Opiate Addiction 42, 288

Bones, sarcoma of the long 142
Bowel, physiological rest to the large, by surgical intervention 246
Brain tumor, diagnosis of, 628; Importance of ophthalmology and otology in location of — —, 633; *Visual disturbances in — —*, 636; *X-ray examinations in cases of — —*, 639; *Some points in treatment of — —* 641
Breech cases of labor, management of 403
Bronchial asthma, protein sensitization in 188
Bullet wound, unusual appearance of a 342
Cancer propaganda, 5; — of the gall bladder, 175; *Some modern views of —* 339
Carcinoma of the gall bladder, primary 175
Cardiac decompensation, digitalis in treatment of, 132; *Interpretation of — irregularities*, 279; Electrocardiography in the diagnosis of — conditions 727
Cardiovascular system, pelvic pathology in 395
Captain 41
Cataract, some remarks about 306
Cesarean section: its indications and limitations 215
Chest, some observations on surgery of, during 26 months in the military service 30
Childhood, relation of age to disease in, 313; Tuberculosis in — 407
Children, difficulties encountered in diagnosis of tuberculosis in 644
Cholecystitis, duodenal ulcer and 34
Choroid, report of case of melanotic sarcoma of 84
Citizenship and the physician 91
Cleanliness in surgery, practical suggestions for stricter 1
Clinical medicine, deterrents to advancement of 549

Colleges
Medical College of Virginia 167, 172
University of Va., Med. Dept. 232, 684

Congenital pyloric stenosis, 262; — *hypertrophic pyloric stenosis* 437
Corneal ulcers, recent advances in treatment of 385
Craig, Alexander Righter 417
Cretinism and mongolism, differentiation between 366
Cutaneous aspects of nutritional diseases 505
Cystadenoma of the ovary, papillary: pathology and prognosis 729

Deaths (see *Obituary Record*)
Deficiency diseases, a consideration of: diseases resulting from faulty diets 489
Dentist and the physician, the relation between the, 244; Co-operation between the internist and the —, 465; The internist, the —, and focal infection 682
Dentistry from the viewpoint of the neurologist, 335; *Relation of modern — to the practice of medicine*, 88; *Co-operation of*

the physician in preventive — 258
Dermatology, radium in, 40; X-ray in — 122
Deterrents to the advancement of clinical medicine 549
Diabetes mellitus, pancreatic extract in treatment of, 405; *Relation between syphilis and* — —, 662; *The finer adjustments of the diet in severe* —, 291; Insulin and —, 614; Hospitalization and —, 681; Balancing the ration in severe — 706
Diagnosis, the laboratory as an aid to, 251; X-ray as an aid to — 276
Diet, diseases resulting from faulty, 489; Finer adjustments of the — in severe diabetes, 291; Balancing the — in severe diabetes 706
Digitalis in treatment of cadiac decompensation 132
Diphtheria, treatment of, 203; *Observations on — in Virginia* 513
Doctor, the regular, 100; Justice for the — 412
Dry milk in infant feeding, the use of 700
Dyspnea, hydrops, not relieved by aspiration; report of case 161
Ductless glands, recent views of some 425
Duodenal and chronic gastric ulcer, etiology, diagnosis and and treatment of, 532; Surgical treatment of — — — — —, 537; X-ray phases of — — — — —, 539; *Acute perforation of — ulcer*, 27; — *ulcer and cholecystitis* 34
Ear, inner, and eighth nerve, syphilis of, 120; Two cases of — — — — — — —, 337; Plea for greater effort to conserve hearing in diseases of middle — and mastoid 85
Eclampsia, treatment of 595
Ectopic kidney, report of case of 363
Eczema, local treatment of 390
Education, certain aspects of medical 509
Elbow joint, compound fracture of; case report 457
Electrocardiography in the diagnosis of cardiac conditions 727
Electrotherapeutic misconception, a: the sinusoidal current 65
Empyema of maxillary sinuses, secondary to extraction of teeth 211
Endocarditis, bacterial, as sequel to syphilitic valve defect, 677; *Subacute* — —, 292; *Malignant tricuspid* —, *with probable Banti's disease: case report* 380
Endocervicitis, chronic 96
Esophagus, wire ring in: removal 474
Ethics, reflections on medical 15
Exanthem occurring in infants, with unusual symptomatology 705
Eye, first aid to the injured 249
Facial paralysis, surgical treatment of, 180; *Correction of — defects with special reference to nutrition of skin flaps and planning of repair* 301
Faculty, the neglected latent 397, 670
Fallopian tubes, patency of the, ascertained by transuterine injection of fluids 606
Feeding of infants, artificial, 256; The use of dry milk in infant — 700
Fever, on the nature and treatment of hemorrhagic 127
Fibroid, uterine, treated with radium 14
Focal infection in chronic and recurring disease, 557; — — *and its relation to obstetrics*, 282; The internist, the dentist, and — — 682
Forces which prevent modern medicine from being a success 578
Fracture of elbow joint, compound: case report 457
Gall bladder disease, 74; Primary carcinoma of the — —, 175; Transduodenal drainage of biliary system or non-surgical drainage of — tract 478
Gastric and duodenal ulcer, chronic, etiology, diagnosis and treatment of, 532; *Surgical treatment of* — — — — —, 537; *X-ray phases of* — — — — —, 539; — analysis and the stomach tube 353
Gastro-intestinal disorders of infants 327
Goiter in man, prevention of simple, 286; *Diagnosis and X-ray treatment of toxic* —, *with report of five cases* 469
Gonococcus septicemia 609
Gonorrhea, metastatic complications of, and their treatment 608
Gynecological conditions, radium in non-malignant 39
Hay fever, protein sensitization in 188
Head pains and other pains due to nasal irritation 61
Healing art, the trend of the 135
Health, public, the layman in, 519; *Work of State Board of* —, 113; Development of — — activities in rural districts, 322; *Changes in a small town brought about by the — department* 517
Hearing, a plea for greater effort in conservation of, in acute diseases of the middle ear and mastoid 85
Heart, the blood supply of the, 43; Interpretation of irregularities of the —, 279; Syphilitic — disease 608
Hemorrhage, tonsillar, 214; Control of — in tonsillectomy 391
Hemorrhagic fever, on the nature and treatment of 127
Hernia of liver and intestines in new born 201
Hookworm, carbon tetrachloride in treatment of 294
Hospitalization and diabetes 681
Hydatidiform mole, report of a case of 462
Hydrops dyspnea not relieved by aspiration: report of case 161
Hydrothorax of cardiac origin, practical considerations in 103
Hyperthyroidism 231
Hypertrophic pyloric stenosis, congenital 437
Hysteria, diagnosis of 285
Infancy, tuberculosis in, 407; Pneumonia in — 430
Infants, artificial feeding of, 256; Gastrointestinal disorders of —, 327; Use of dry milk in feeding of, 700; An exanthem occurring in—, with unusual symptomatology 705
Insulin and diabetes 614
Insurance company, relation of a medical examiner to a life 599
Internal secretion symposium 416
Internist and dentist, co-operation between, 465; *The* —, *the dentist, and focal infection* 682
Intestinal disorders of infants, gastro 327
Intestines and liver, hernia of, in the new born 201
Intracranial growths, importance of ophthalmology and otology in location of 633
Intravenous medication, the limitations of 608
Jaundice, infectious, 540; *Necessity for the determination of the origin of — before surgical treatment* 284
Justice for the doctor 412
Kidney function, 606; *The — and uremic tests*, 44; *Silent* — stones, 70; Appendicular liver and —, with report of cases, 98; *Report of a case of ectopic* —, 363; — *abscess and pyonephrosis: review of cases* 715
Labor and puerperium, management of normal, 136; *Advantages and methods of making — easy*, 147; Management of breech cases of — 403
Laboratory as an aid to diagnosis, the 251
Latent faculty, the neglected 397, 670
Licensed attendants, suggestions for training of 226
Liver and kidney, appendicular; with report of cases, 98; Hernia of — and intestines in newborn 201
Lung abscess: with report of cases, 53; Syphilis of the —, with report of case 345
Lungs, syphilis of the 166
Lymphatics, lymph and lymph glands 230
Malaria, limitations to use of quinine intravenously in treatment of, 40; Extreme or terminal —, 127; *Program for — control in Virginia* 219
Mammary gland, tumors of 222
Mastoid, plea for greater effort to conserve hearing in diseases of middle ear and 85
Mastoiditis, report of case of rapid sinus thrombosis complicating acute; with remarks on involve-

ment of torcular region, 378; *An unusual case of —; operation and recovery* 726
Maxillary sinus infection, prevalence of unsuspected chronic, 601; Empyema of — — secondary to extraction of teeth 211
Maxwell antrum punch 324
McGuire, bust of Dr. Hunter, presented college 616
Medical ethics, reflections on, 15; *The new requirements in the — life*, 165; Organization and functioning of the — department of a division, 240; *Certain aspects of — education*; 509; Relation of a — examiner to a life insurance company; 599; Ocular examinations in their relation to general — investigations 625
Medicine for 40 years, the practice of, 440; Deterrents to advancement of clinical —, 549; Forces which prevent modern — from being a success 578
Metabolism studies in thyroid disease, the value of basal 708
Melanotic sarcoma of choroid, report of case of 84
Metastatic complications of gonorrhea and their treatment 608
Milk, bacillus acidophilus, and lactose, studies on therapeutic effect of, 407; Notes on therapeutic use of — — — in Richmond 590
Mole, case of hydatic 462
Mongolism and cretinism, differentiation between 366
Moral conditions of the present day 325
Mortality, time and 734
Myeloma, multiple, with report of the case 723
Nasal irritation, remarks about head and other pains due to 61
Negro, tuberculosis problem and the 561
Neoarsphenamine, excretion of arsenic after serial administration of 101
Neoplastic diseases, speculations concerning the genesis of 450
Nerve, syphilis of the inner ear and, 120; Report of two cases of syphilis of eighth — and inner ear 337
Nervous system, diagnosis and treatment of syphilis of the central '269
Neuralgia, surgical treatment of trigeminal 33
Neurological aspects of nutritional diseases 503
Neurologist, dentistry from viewpoint of the 335
Neurosyphilis, diagnosis and treatment of 269
Nostrums and quackery 41
Nutritional diseases, pediatric aspects of, 494; General consideration of — —, 489; *Orthopedic aspects of — —*, 498; *Neurological aspects of — —*, 503; *Cutaneous aspects of — —* 505
Obituary Record
Dr. Kemp Plummer Battle 112
Dr. Orion Baum 692
Dr. Robert Gamble Cabell 174
Dr. Forest Alphonso Carpenter 624
Dr. John Herbert Claiborne 173
Dr. D. Oscar Clements 423
Dr. Harry C. Cline 556
Dr. William S. Cline 556
Dr. John R. Couch 752
Dr. Alexander Righter Craig 362
Dr. Edward A. Craighill 624
Dr. William F. Driver 362
Dr. William Logan Dunn 236
Dr. Meade Randolph Edmunds 624
Dr. A. C. Fisher 174
Dr. Frank Arnold Fox 624
Dr. Franklin P. Gates 174
Dr. Bertram Hensel Gilmer 300
Dr. Joseph Eugene Good 174
Dr. Charles U. Gravatt 112
Dr. Barksdale Hales 424
Dr. William Stewart Halsted 424
Dr. John Robert Lee Hardesty 752
Dr. Halbert Porter Harris 486
Dr. Sampy Davis Hatfield 236
Locksley P. Hening 362, 424
Dr. Erasmus Guy Hopkins 623, 692
Dr. Samuel L. Jepson 174
Dr. Frank Aikman Jones 556
Dr. William Turner Jordan 52
Dr. Thaddeus N. Kabler 112
Dr. Claude Dalby Kellam 624
Dr. Robert A. Lancaster 486
Dr. George Victor Litchfield, Jr. 424
Dr. Joseph Nathaniel McCormack 174
Dr. Massie L. McCue 556
Dr. James Merit Melton 691
Dr. Orville Nalle 752
Dr. Fenton M. Nichols 751
Dr. William Pickering Norris 290
Dr. Spotswood Hayes Parker 692
Dr. Tunis C. Quick 751
Dr. James M. Raby 752
Dr. Walter Were Rangeley 751
Dr. Gavin Rawls 423
Dr. Alfred S. Rixey 52
Dr. Reuben Lindsay Robertson 236
Dr. James Philip Roy 692, 752
Dr. Luther Sexton 624
Dr. Willis Wilson Silvester, Jr. 362
Dr. Frank Green Simmons 692
Dr. Edward C. Smith 424
Dr. Harry Richard Smith 556
Dr. Stephen Smith 362
Dr. Marvin LeRoy Smoot 752
Dr. Samuel Stewart Snarr 624
Dr. Charles Elliott Stafford 752
Dr. William H. H. Tate 692
Dr. Armistead Green Taylor 624
Dr. Hugh McGuire Taylor 173, 236, 300
Dr. Philip Taylor 299, 424
Dr. John J. Terrell 556
Dr. Charles Mason Thomas 52
Dr. William Hall Thomas 52
Dr. Karl von Ruck 486
Dr. Edward Ashby Waugh 300
Dr. James J. Wingard 752
Dr. John Allen Wyeth 174
Obstetric statistics 665
Obstetrics, focal infection and its relation to 282
Ocular sign of syphilitic infection, 607; *Concerning — examinations in their relation to general medical and surgical investigations* 625
Onanism, rectal, with report of case 9
Ophthalmology, importance of, in location of intracranial growths 633
Optometry: its limitations and dangers 348
Organization and functioning of the medical department of a division 240
Orthopedic aspects of nutritional diseases 498
Osteomyelitis, acute infective, with report of cases 449
Otology, importance of, in location of intracranial growths 633
Ovary, papillary cystadenoma of the: pathology and prognosis 729
Oxygen supply and demand in general anesthesia 523
Pancreatitis, acute 388
Papillary cystadenoma of the ovary: pathology and prognosis 729
Paralysis, surgical treatment of facial 180
Paresis: a brief resume of treatment 38
Pediatric aspects of nutritional diseases, 494; *Some — practicalities* 696
Pelvic pathology and the cardiovascular system 395
Pelvis, the Richmond 370
Peptic ulcer 433
Pericarditis with effusion 140
Perineal route, prostatectomy with special reference to the 718
Perirenal lacerations, remarks on 454
Pharmacopeia, doses proposed for U. S., 10th revision 225
Philippines, smallpox in 223
Physician, citizenship and the, 91; Relation between the dentist and the —, 244; Co-operation of the — in preventive dentistry 258
Plastic surgery: nutrition of skin flaps in correcting facial defects 301
Pneumonia: etiology and diagnosis, 193; *Symptomatology and treatment of —*, 195; *Some phases in treatment of —*, 199; *— in infancy* 430
Pneumonoconiosis: reports of cases 647
Pneumoperitoneum, transuterine 130
Pneumothorax, case of pulmonary abscess of lower right lobe treated by artificial 585
Poliomyelitis, acute anterior 25
Practice of medicine for 40 years 440
President's address 487
President, our new 550
Pregnancy, blood pressure in, 3; Pyelitis of — 286
Prostatectomy: report of cases, with special reference to preoperative and post-operative treatment, 475; *— with special reference to the perineal route*, 718; *Some further observations on —* 721
Protein sensitization in bronchial asthma, hay fever, and allied conditions, with report of writer's own case, 188; *Diseases associated with — —* 316
Peurperium, management of normal labor and the 136
Pulmonary abscess of lower right lobe treated by artificial pneumothorax; report of case, 585; *Diagnosis of — tuberculosis* 266
Pyelitis of pregnancy, 286; Acute —; acute appendicitis; acute salpingitis; differential diagnosis 158

Pyloric stenosis, congenital 262, 437
Pyonephrosis, kidney abscess and: review of cases 715
Quackery and nostrums 41
Quinine intravenously in treatment of malaria, limitations to use of 40
Radium in dermatology, 40; Uterine fibroid treated with —, 14; — in non-malignant gynecological conditions 39
Railway industrial surgery, remarks on 311
Ration, balancing the, in severe diabetes 706
Rectal onanism, with report of case, 9; *Notes on — surgery* 405, 540
Regional anesthesia 581
Rest, physiological, to large bowel, by surgical intervention 246
Richmond pelvis, the 370
Roads from a country doctor's standpoint, 604; *Bonds for good —* 737
Roentgenology in its relation to the general practitioner 444
Ross, birthday of Dr. George 481
Rural districts, development of public health activities in 322
Salpingitis, acute; acute appendicitis; acute pyelitis; differential diagnosis 158
Salvarsan, some remarks on technique in mixing and administering 206
Sarcoma of the long bones, 142; Report of case of melanotic — of choroid 84
Septicemia, gonococcus 609
Shock, new light on wound 415
Siamese twins, report of case of 14
Sinus infection, prevalence of unsuspected chronic maxillary, 601; Empyema of maxillary — secondary to extraction of teeth; 211; Report of case of rapid — thrombosis complicating acute mastoiditis; with remarks on involvement of torcular region 378
Sinusitis, brief remarks on; report of case 151
Sinusoidal current: an electrotherapeutic misconception 65
Smallpox in the Philippines 223

Societies, Boards, etc.
Albemarle Co. Med. Society 677
Alpha Omega Alpha Fraternity 49, 106
Amer. Assn. Genito-Urinary Surg. 169
Amer. College of Surgeons 484
Amer. College Physicians 108
Amer. Cong. on Internat. Med. 109
Amer. Dermatolog. Assn. 169
Amer. Electrotherapeutic Assn. 485
Amer. Gynecolog. Society 169
Amer. Laryng. Assn. 169
Amer. Laryng., Rhin. & Otolog. Soc. 171
Amer. Medical Assn. 163
Amer. Med. Editors' Assn. 554
Amer. Ophthalmol. Society 169
Amer. Pediatric Society 169
Amer. Proctologic Society 170
Amer. Psychiatric Assn. 295
Amer. Society Tropical Med. 169
Arlington Co. Med. Society 412
Assn. Amer. Med. Colleges 49
Assn. Amer. Physicians 169
Assn. Military Surgs. of U. S. 477
Assn. S. A. L. Ry. Surgeons 612
Assn. Surg. C. & O. Ry. 554
Assn. Surgs. Southern Ry. 298
Augusta Co. Med. Assn. 355
Bedford Co. Med. Society 411
Board of Criminal Mental Hygiene 295
Botetourt Co. Med. Society 486
Buckingham Co. Med Society 411
Cuban Soc. Gastro-Enterolgy 111
Eighth Dist. (N. C.) Med. Soc. 109
Fayette Co. (W. Va.) Med. Society 483
Internat. Conf. on Standardization of Serums & Serolog. Tests 621
Internat. Cong. of Ophthalmol. 170
Kanawha (W. Va.) Med. Society 685
Ky. State Med. Assn. 553
La. State Med. Society 109
Lunenburg Co. Med. Society 412
Lynchburg & Campbell Co. Med. Soc. 412, 612
Mecklenburg Co. Med. Society 544
Med. Assn. of Valley of Va. 411
Med. College of Va. Alumni Assn. 417
Med. Society of D. C. 688
Med. Soc. of State of N. C. 168
Med. Society of Va. 108, 226, 233, 408, 482, 540, 609, 675
Med. Soc. Va., Md. & D. C. 163, 484
Med. Soc. of Warrenton 52
Miss. Valley Med. Assn. 554
Nat. Assn. Police & Fire Surgs. 555
Nat. Tuberculosis Assn. 169
Nelson Co. Med. & Surg. Soc. 287, 411
Newport News Med. Society 49
N. Y. Electrotherapeutic Soc. 109
N. C. Hospital Assn. 554
N. C. Public Health Assn. 168
N. C. Sixth Dist. Med. Soc. 295
Norfolk Co. Brd. of Health 482
Norfolk Chapter M. C. V. Alumni 170
Norfolk Co. Med. Soc. 227
Northern Neck Med. Assn. 163
Piedmont Med. Society 288, 544
Pr. Edward Co. Med. Society 355
Raleigh Co. (W. Va.) Med. Society 544
Rchd. Acad. Med. & Surg. 612
Rchd. Dental Society 621
Rchd. Surgical Society 542
Roanoke Acad. Medicine 485
Seaboard Med. Assn. of Va. & N. C. 612
S. C. Med Assn. 111
South Piedmont Med. Soc. 163
Southampton Co. Med. Soc. 412
Southern Assn. Anesthetists 623
Southern Gastro-Enterolog. Assn. 623
Southern Hospital Assn. 623
Southern States' Assn. Ry. Surgs. 623
Southern Surgical Assn. 620
Southside Va. Med. Assn. 411, 612
Southwestern Va. Med. Society 411
Sussex Co. Med. Society 105
Tenn. State Med. Assn. 111
Tri-State Med. Assn. of Carolinas and Va. 745
Va. Grad. Nurses' Assn. 163
Va. Pharmaceutical Assn. 234
Va. Soc. Oto-Laryng. & Ophthal. 553
Va. State Board of Health 296
Va. State Brd. Med. Examiners. 50, 287, 677
Va. State Dental Assn. 485
Va. State Nurses' Assn. 226
Va. Tuberculosis Assn. 485
Walter Reed Med. Society 228
Warwick Co. Med. Cociety 612
W. Va. State Med. Assn. 169
Women Phys. of Southern Med. Assn. 623

Spleen in surgery, the 10
Splenectomy in treatment of splenic anemia 652
Spondylitis deformans (Marie-Strumpell type) 595
Stenosis, congenital pyloric 262, 437
Stomach, syphilis of the, 40; Gastric analysis and the — tube 353
Stones, silent 70
Strabismus, management of convergent 332
Surgery, practical suggestions for stricter cleanliness in, 1; The spleen in, —, 10; Some observations on — of chest during 26 months in military service, 30; Remarks on railway industrial — 311
Surgical treatment, necessity for determination of origin of jaundice before, 284; *Is progress being made in the — — of acute abdominal conditions?* 573; After care of abdominal — patients, 237; Physiological rest to the large bowel by — intervention, 246; Ocular examinations in their relation to — investigations 625
Syphilis of inner ear and eighth nerve, 120; *Report of two cases of — — — — — — —*, 337; — of the stomach, 40; Congenital —, 101; — of the lungs, 166; Diagnosis and treatment of — of the central nervous system, 269; — *of the lung, with report of case*, 345; Reinfection with —, 609; Relation between — and diabetes mellitus, 662; Diagnosis of early —, 677; Treatment of — with bismuth salts, 679; Transmission of — to second generation, 738; Bismuth in treatment of — 739
Syphilitic heart disease, 608; An ocular sign of — infection, 607; Treatment of — liver and heart 679
Syphilology, progress in 608
Teeth, empyema of maxillary sinuses secondary to extraction of 211
Testicular transplantation in man, successful heterogenous 343
Tetanus 443
Thrombosis, report of case of rapid sinus, complicating acute mastoiditis; with remarks on involvement of the torcular region 378
Thyroid gland, recent views on, 425; *The value of basal metabolism studies in — disease*, 708; *Comments on — diseases* 741
Time and mortality 734
Tonsil, the submerged 150
Tonsillar hemorrhage 214
Tonsillectomy, control of hemorrhage in, 391; The Waring suction — 472
Torcular region involved in case of rapid sinus thrombosis complicating acute mastoiditis 378
Transuterine pneumoperitoneum 130
Trichomonas vaginalis cause of vaginitis 393
Trigeminal neuralgia, surgical treatment of 33
Tuberculosis, home treatment of, 93; Diagnosis of pulmonary —, 266; — in childhood and infancy, 407; *The — problem and the negro*, 561; — *in rural Virginia*, 566; *Where can we find our cases of incipient —?* 586; *Difficulties encountered in diagnosis of — in children* 644
Tumors, brain, diagnosis of, 628; Importance of ophthalmology and otology in location of — —, 633; Visual disturbances in — —, 636; X-ray examinations in

cases of — —, 639; Some points in treatment of — —, 641; — *of the mammary gland* ------- 222
Twins, report of a case of Siamese 14
Tympanic diseases, prophylaxis in acute ---------- 464
Typhoid fever with perforation, report of case of, also some general observations on — perforation ---------- 649
Ulcer, chronic gastric and duodenal, etiology, diagnosis and treatment of, 532; Surgical treatment of — — — — —, 537; X-ray phases of — — — — —, 539; Acute perforation of duodenal —, 27; Duodenal — and cholecystitis, 34; *Submucous — of bladder*, 202; Recent advances in treatment of corneal —, 385; Peptic — ---------- 433
Umbilicus, delayed union in non-infected wounds above the---- 711
Uremic tests and the kidney--- 44
Urine, the diagnostic value of analyses of the ---------- 22
Urological cases, the management of ---------- 656
Uterine fibroid treated with radium ---------- 14
Vaginitis due to trichomonas vaginalis ---------- 393
Venereal diseases from the army standpoint, 155; *The relation of the general practitioner to — —* ---------- 160
Vertigo, some comments on the subject of ---------- 528
Visual disturbances in brain tumor 636
Vitamins, proprietary ---------- 166
Wail of the young---------- 672
Waring suction tonsillectomy---- 472
Wassermann reaction, clinical evaluation of the ---------- 607
Women, effect of our modern, upon the future generation---- 265
Wound, unusual appearance of a bullet, 342; *New light on — shock* ---------- 415
Wounds above the umbilicus, delayed union in non-infected---- 711
X-ray in dermatology, 122; — as aid to diagnosis, 276; — treatment of toxic goiter; five cases, 469; — phases of chronic gastric and duodenal ulcer, 539; — examinations in cases of brain tumor ---------- 639
Young, wail of the ---------- 672

Fifty-third Annual Session, Norfolk, Va., October, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

VOL. 49, NO. 1
WHOLE NO. 838

RICHMOND, VA., APRIL, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

PRACTICAL SUGGESTIONS FOR STRICTER CLEANLINESS IN SURGERY.*

By SOUTHGATE LEIGH, M. D., F. A. C. S., Norfolk, Va.
Visiting Surgeon, Sarah Leigh Hospital.

In my previous consideration of the subject of Surgical Cleanliness, before this and other societies, I have endeavored to stress as strongly as I possibly could my conviction that cleanliness in surgery has, during the past few years, been going backwards instead of forwards, resulting in many cases of infection, even in the work of the best surgeons.

The history of antisepsis from the earliest times down to the work of Lister, and the introduction of Listerism into this country by Gerster, Keen, and others, was discussed by me before the Richmond meeting of this Society. In that discussion I tried to show that the younger generation of surgeons, knowing but little of the history and successful efforts of the great leaders of surgery in this country who succeeded in overcoming opposition and ridicule and placing antisepsis on a firm footing in America, have only a superficial conception of the difficulties and obstacles that had to be met and overcome. In the light of the present day hospital situation, it is hard for them to realize that at that time hospitals were indeed nest-beds for infection, and that tremendous and continuous effort was necessary to obtain clean results. This situation continued for some years. The men, like Gerster, who with sledge-hammer blows, drove their own convictions into the minds of the profession, regardless of opposition and incredulity, got almost as good clean results as in the surgery of today, while their careless colleagues were overwhelmed with the old troubles of constant and repeated infections.

It is well to bring these matters to the attention of the present day surgeons, from time to time, because it will cause them to have more respect for chemical antiseptics, those useful agents, which from prejudice and misunderstanding have been so largely discarded. As mentioned in a former paper, so-called "asepsis" was used so largely in the management of the wounded in the early part of the World War, and with such extremely disastrous and fatal results, as to bring forth from the pen of the great English surgeon Godlee the call "Back to Listerism."

This same unfortunate situation had, no doubt, much to do with the development of the chlorine group of antisepsis, which have become so wonderfully useful in industrial as well as war surgery.

The vital point, that is overlooked by so many good surgeons today is that the fight for clean surgery is a continuous fight, an unending fight. We have the same dangerous bacteria around us today as our forefathers in surgery had. There has been no modification in their virulence nor have the constitutions of our patients developed an immunity against them. They are just as capable as ever of producing septicemia, erysipelas and hospital gangrene, the horrible diseases which made hospital work of former times so dreadful.

It is true that the average infections of formerly clean wounds are mild, but that is due to the fact that everybody observes to some extent the principles of antisepsis. Once in a while a violent infection does occur, and we must always bear in mind that in careless surgery severe and dangerous infections may occur at any time.

In former, and recent papers, I have attempted to mention the various causes of sepsis as originating from lack of training of the surgeon, faulty management of the operating room force, and lack of care on the part of the average good surgeon. In a hospital or in an operating room, where the surgeon has absolute control of the operating room staff and preparation of the patient, there is absolutely no excuse for infection of clean wounds. Such a surgeon must, however, feel tremendously the grave responsibility, instruct his assist-

*Read at the fifty-second annual meeting of the Medical Society of Virginia, in Lynchburg, October 18-21, 1921.

ants in the most vigorous, convincing and detailed manner, and be eternally vigilant. He must see that each and every doctor and nurse taking part in the work is profoundly impressed with his or her responsibility, and must take no chances by having careless ones around him. Every detail of the preparation of the patient, instruments, dressings, hands and room must be looked after in the most positive and exact manner. The nurse in charge of the operating room ought to be so extreme as to be considered a "crank" on surgical cleanliness. It is so easy to be careless, so simple and convenient at times to make a little "slip," but the consequences may be disastrous. Eternal vigilance, then, should be the watchword.

The difficult problem is in the large hospitals, even with closed-staffs, and supposedly competent surgeons. As stated in a former paper, in the early days of antisepsis, in each such large hospital, there was one dominant figure in surgery, who by his skill and progressive work was by consent looked up to as the leader in that institution. These men were in a position to have their orders and views carried out to the letter. It was fortunate that such a state of affairs existed at that time, otherwise Listerism would not have received so prompt and thorough attention in this country.

Today the situation is entirely different. Now each such hospital has a number of excellent surgeons, and the responsibility is greatly divided, and made most uncertain.

I have recently talked with the nurses in charge of the operating rooms of several large well organized hospitals, and am strongly of the opinion that such operating departments are not directed by the surgeons as they should be.

I was especially endeavoring to find out what was being done in the way of safe preparing of gloves, and was rather surprised to find that gloves used in septic cases were mixed with clean gloves, and after very incomplete boiling used in later clean cases. This should not be. The usual method of sterilizing gloves is a very unsatisfactory and uncertain one. In addition to the boiling that the rubber will stand, the gloves should be treated antiseptically. I was pleased to find in one large hospital that, after boiling, the gloves were kept immersed in 1-1,000 bichloride until ready for use, a method rather hard on the operator's hands but good for the patient.

In a closed-staff hospital, the operating room and its staff should be placed under the strict direction of that member of the surgical staff who shows the deepest interest in surgical cleanliness. He should be given as much authority as possible over the nursing staff of the operating room as well as over the other surgeons. The nurses should receive from him the most detailed and continuous instruction, and close watching, and he should have authority to make rules for the operators and see that these rules are obeyed.

How can a careful and clean surgeon expect to get perfect results in an operating room, where the surgeon using the room before him has thrown dirty sponges all over the floor, and has allowed septic discharges to soil the table? It is positively unsafe to have dirty cases in such an operating room, unless the most extreme precautions are taken. Every drop of a septic discharge must be caught and immediately destroyed by chemical or other means.

As also stated in a former paper, the ideal plan is for each operator to have his own separate operating room and staff, under his complete control. This, of course, is rarely feasible.

The problem in the large hospitals, up to two years ago, seemed almost insurmountable but most fortunately and opportunely the American College of Surgeons about that time gained a tremendous influence over the hospitals of this country and, through the workings of its splendid plan of standardization, the difficulty is easy of solution. There is no reason why, in each standardized hospital, absolute "clean" control of the operating room may not be practiced.

The difficulty, however, is still very great in the general hospitals, especially throughout the South, where a large number of doctors attend, and are allowed to do practically as they please.

The hope, as well as the vital necessity here also, lies in the influence exerted by the American College of Surgeons, which insists that *every hospital* must be standardized, and that a responsible staff shall dictate the professional policy of the institution, and be held responsible for such policy.

In a good hospital of this class, with the staff properly organized and imbued with a feeling of its deep responsibility to the profession and the public, there should be no diffi-

culty in placing a highly trained, broad, tactful man in control of the conduct of the operating room, with sufficient authority to enforce the vital principles of surgical cleanliness. I realize that such an arrangement is a difficult one, and yet, if it is a necessity in order to insure safety in surgery, it must be carried out.

From what I have learned, the College will probably go more deeply into the details of insuring safe surgery, including surgical cleanliness, at a later period. Why wait for such action? The hospital staffs are already organized and functionating, and have sufficient authority and co-operation.

The most difficult part of the work of the operating room supervisor will, of course, be the ruling out of men who are not competent to do safe surgery. That, however, regardless of its disagreeable features, is a duty that must be performed.

In these times, doctors ought to know what they are able to do safely, and should avoid attempting work they are not trained in, especially surgical. If any such unsafe men do attempt to operate, they should be ruled out until such time as they have improved and demonstrated their fitness.

Surgical cleanliness, like the art of surgery itself, cannot be learned from books, nor yet from visiting clinics. The following of rules is not sufficient. The safe surgeon must have served an apprenticeship, working for a sufficient time alongside of a surgeon who is thorough, careful, and safe in his views and technique.

In conclusion, I must crave your indulgence for having again brought this subject to your attention, and especially on account of the fact that I have failed to present any new points. My excuse is that I feel tremendously impressed with the importance of the subject, with the idea that it is really being neglected by the profession, and with an earnest desire to do my little to help the good work.

BLOOD PRESSURE IN PREGNANCY.*

By J. N. UPSHUR, M. D., Richmond, Va.

No intelligent doctor assumes that blood pressure is anything but a symptom. But with the laity it is a catchy phrase which we constantly hear, and to which the aforesaid laity attach a varied significance. They have neither the ability nor inclination to analyze its cause, or to define what may be the pathologic condition back of it.

That it is not uncommon in the pregnant woman and is of sufficient importance to require careful supervision and treatment, no one will deny. Why should this condition exist when a purely physiological process is developing? Not always is there an attendant albuminuria and yet it is a menace to the life of both mother and child. It is, therefore, of the utmost importance that, if possible, we should rightly appreciate its etiology as the true basis for such rational treatment as will safeguard the life of both mother and child.

In blood pressure, as we see it in the individual under ordinary circumstances, there are various causes developing this symptom. Yet we must recognize the fact that the conditions are in a large measure different in the pregnant woman. There is the condition of increased plasticity in the blood, the question of diet, a modification of nutritive conditions from some upset in the internal secretions, thyroid, hypophysis, adrenals, ovary, liver and placenta. We know that there is an internal secretion from the placenta, and it is a most important factor. Says Bandler (The Endocrines, pg. 208) "the placental secretion exerts a decidedly irritating influence: it is a substance which follows the course of the blood into all organs of the body, producing changes of marked character, particularly in certain instances in the liver, with marked alterations of metabolism." "These changes are of a necrotic nature and haemorrhagic type."

There is also an alteration in the ovarian function in pregnancy. We also know that it is true that various nervous reflexes assert themselves. The pregnant woman is a different person from the non-pregnant woman. There are the common reflexes of nausea, sympathetic tenderness in the breasts, fainting at the beginning of pregnancy, etc. These symptoms may have back of them the blood contamination from placental secretion. I am simply discussing at this point the general question of blood pressure. High blood pressure is what is most commonly seen, yet we may have the reverse, and a recent case of low pressure and attendant symptoms has been suggestive for this paper.

The advances in pathology have rendered analysis of symptoms and their causation more subtle and difficult than ever before, and

*Read by title at meeting of Tri-State Association of the Carolinas and Virginia in Norfolk, Va., February 22-23, 1922.

we often have to contend in treatment with vicious circles. The danger of convulsions when the blood pressure is high keeps us ever uneasy until full term arrives and delivery is accomplished, the pressure being lowered then by the extrusion of the placenta and the bleeding which usually occurs at the conclusion of labor.

When we find high blood pressure, our attention immediately reverts to the kidney, yet analysis may find albumen absent and the secretion normal. I recall the case of a man with high blood pressure, who had four violent attacks of convulsions, yet in the earlier attacks there was no pathologic evidence in the kidney, and in the latter, only a trace of albumin, which soon disappeared. This case illustrated the profoundly toxic effect of eating meat, an article of diet which should be prohibited in the high blood pressure of pregnancy. In fact, there is no more important element of treatment, than the intelligent control of nitrogenous elements of diet in the pregnant woman. We know the habits of society women and the kind of eating that they do at social functions. Errors in diet bring markedly to the fore the liver, and impaired emunctory function of this organ. It should receive as careful supervision in the case of the pregnant woman as do the kidneys, and she is always safeguarded by an occasional dose of calomel.

Administration of the usual remedies, nitrites and iodides, so commonly used and with benefit, in treating blood pressure, should be very carefully considered before exhibition in the therapy of blood pressure of the pregnant woman; the age of the subject must be considered as she is younger than the average case of blood pressure that we see; the effect of medication on the foetus must not be lost sight of; it is more difficult to remove the cause, and in a certain proportion of the cases, especially when secondary albuminuria develops, our only recourse is in early delivery, by natural route, or by Caesarean section, in order to safeguard the life of both mother and child. There is a special objection, I believe, to iodide of potassium, the most valuable remedy when given in progressively increasing doses and continued for some time in the ordinary cases, because it is so hard on the stomach. When we have such urgent symptoms as impaired vision, ringing in the ears, vertigo, and headache, if not promptly relieved by bromides, our best recourse, I believe, is free venesection, complete rest, and rigid regulation of diet.

I have no experience in that direction, but we know that lead poisoning is a common cause of arteriosclerosis, so I only throw out the suggestion, may not the paint and powder on the faces of so many young women of the present day exert a toxic influence, showing up when pregnancy lights the torch? Could not this come about as a sequence of a vasomotor paresis in the blood vessels? But, *per contra*, in an experience of many years, I have failed to see a case of markedly low blood pressure in pregnancy. Note the following case:

Mrs. E. B., aet. 27 years, in her third pregnancy. A woman of good physique, leads an active life, had the usual diseases of childhood. When menstruation was established at the usual age, she had an occasional fainting spell. Had borne two children with uneventful labor and puerperium. Had mild fainting spells during each pregnancy. She had no cardiac lesion. Repeated examination of the urine was negative. After the fourth month, she had frequent fainting spells, sometimes two in a day, coming on suddenly with complete unconsciousness. She never had headache, dizziness, nor ringing in the ears. Face was pale and lips colorless. Appetite was good and there was every evidence that she was well nourished. My attention was first called to attacks of fainting on November 21, 1921. Pulse was thready and absolutely lacking in force, tension so feeble that it did not record. Labor was due on January 23, 1922. She was put on strychnia, gr. 1-20, twenty drops tr. digitalis three times a day, and whiskey, as necessary. Under this treatment, pulse tension decidedly improved, the color returned to her lips, and cheeks became rosy; fainting spells became much less frequent and finally ceased entirely several weeks before confinement, which occurred on January 16, 1922. Labor uneventful and a normal puerperium; boy weighed 8 lbs. and very plump and vigorous. On the day after delivery the record was S. 110, D. 90, pulse normal; 17th day after delivery, record showed S. 130, D. 100.

I do not pretend to explain the causes acting in this case; perhaps it was the effect on her heart of some upset in balance, or perversion of the internal secretions, hypopituitarism, secondary change in the adrenals, placental secretion, or an acidosis. This latter, how-

ever, never showed up in the urinary analysis.

This case is reported as a suggestion for thought and further observation in this direction, as opposed to the high pressure so commonly observed.

1103 *West Franklin Street.*

CANCER PROPAGANDA.*

By JOHN WESLEY LONG, M. D., F. A. C. S., Greensboro, N. C.

Emeritus Professor Diseases of Women, Medical College of Virginia; Director American Society for Control of Cancer; Surgeon in Chief, Wesley Long Hospital.

I accepted the call from your Secretary, Dr. J. K. Hall, to address this distinguished Association of physicians and surgeons because it is through you that we hope to reach the public with the truth about cancer. I hasten to say that I bring you no new doctrine, but I do come with a message of hope for your patients.

Out-standing Facts About Cancer:—Certain facts regarding the subject stand out with startling clearness. Let him read who runs!

1. Cancer is prevalent throughout the world.

2. Cancer is strictly an individual disease being neither contagious nor hereditary.

3. Cancer is the most fatal disease we know ninety-nine per cent. of the cases proving fatal if allowed to run its course.

4. The annual death rate from cancer in the United States is 78.9 to the 100,000 population: or more than 85,000 deaths each year. This means that one person dies every six minutes from cancer.

5. While the death rate from typhoid fever, tuberculosis, malaria, pneumonia and even old age is constantly on the decline, that from cancer is increasing at the rate of about 2.5 per cent. annually. For instance, the death rate in Massachusetts in 1871 was 39.9 per 100,000 and by 1911 it had increased to 92.6. The death rate in the United States in 1900 was 62.9 and in 1918 was 78.9. In European countries the death rate in 1881 was 44.8, in 1911 it was 90.4.

6. Cancer is a disease of adult life; 85 per cent. of those who die from it are 45 years old or older. Of those reaching 40 years, one man in every 12 and one woman in every 8 dies of cancer.

7. *Fifty thousand lives might be saved every year by an intelligent co-operation between the profession and the laity.*

The Duty of the Profession:—In the light of these facts, are we doing our duty in the matter of educating the masses of the people concerning the great scourge of cancer? We who sometimes arrogate to ourselves the title of "guardians of the public health"?

As I write this address, there are lying in the hospital rooms adjoining three patients whose abdomens I have opened. One has an inoperable cancer of the gall-bladder and liver, which started evidently from chronic irritation due to gall-stones. One has a cancer of the head of the pancreas, causing obstruction of the duodenum and for whom I could only do a gastro-enterostomy. The third has a widespread cancer of the stomach which has no hope except the makeshift of sidetracking the mass by gastro-intestinal anastomosis. Two other patients have cancer of the breast with metastasis, for whom we are using radium, because, forsooth, there is nothing else we can do. We all have these cases—like the poor, they are with us always. The point is they are all late cases. The moral is "why are they late?"

Scientific Papers Efficient but not Sufficient:—I submit that while it is efficient for us to read scientific papers before learned medical bodies, yet it is not sufficient if we wish to reach those who suffer. We must get down upon the level of the average man and speak to him in his own language. Recently, I had the honor of addressing a mixed audience from the same platform with the incomparable Howard A. Kelly, upon the subject of cancer. No man speaks with greater authority than does Dr. Kelly. He delivered one of the finest addreses I ever listened to, it was a masterpiece. He told them all about radium, uranium, emanations and other scientific entities. He went so deeply into his subpect that he apologized to the laity present because he had to use highly technical terms. I followed Dr. Kelly and apologized to the doctors present because I avoided technicalities and spoke the language of the people. Most of what the profession knows about cancer is entirely too scientific and mysterious for Mr. Average

---

*Read before the Tri-State Medical Association of the Carolinas and Virginia, in Norfolk, Va., February 22-23, 1922.

Editor's Note.—When this paper was read, the Tri-State Association, by resolution endorsed it in toto, and authorized its publication in the press, which is an unusual action on the part of the Association.

Following the address, Dr. Long showed a number of lantern slides and a moving picture gotten up by the American Society for the Control of Cancer, illustrating the development of cancer and its proper treatment.

Citizen, much less the ignorant and unlearned, to understand.

The Eunuch and Phillip:—You remember the story of the eunuch who had charge of the treasures of Candace, Queen of Ethiopia. As he was riding in his chariot he read the book of Isaiah. Phillip meeting him asked if he understood what he was reading. The eunuch replied, "How can I expect some man guide me?" Suppose we do like Phillip did; get up in the chariot and sit down by the people and teach them.

If we are to maintain our responsible position as sponsors for the health of the community, we must turn the light of truth into the darkness of ignorance, that the crooked places may be made straight. If we continue our present attitude of aloofness and exclusiveness, we cannot censure the people for believing the tommy-rot taught by cancer-quacks, chiropractors, Christian scientists, et als.

Public Opinion a Matter of Education:—You know that public opinion upon any subject is largely a matter of education and growth. Why, it has not been many generations since we burnt witches; even now we burn sexual maniacs at the stake. Well do I remember human slavery and the defense our Christian parents made in defense of it. And we all are familiar with our recent toleration and license of the liquor traffic.

American Society for Control of Cancer is Educating the Laity:—Therefore, we do not hesitate to say that the American Society for the Control of Cancer, which Society I have the honor to represent, is trying to educate the common people concerning cancer, the most fatal of all diseases. I hasten to add that it is through the ethical channels of the profession that we would spread the propaganda.

The Cause of Cancer:—Now what is it we should teach the people? First, let us eliminate what they do not need to know.

It is not necessary that the public should know the *exact cause* of cancer. No one knows for that matter. The cause of many of the most common diseases has not yet been discovered. Take measles as an ilustration. Yet any country housewife can take her hot herb teas and cure the measles.

We are curing more and more cancers every day, even though we do not know its primary cause.

We may say in all candor that cancer is not a germ disease. In saying this, I am not unmindful of the fact that in Sir Berkely Moynihan's Hospital at Leeds, England, there is being carried out at this time certain experiments trying out the theory that cockroaches have in their cecum a worm which is supposed to carry a parasite which in turn causes cancer in the stomach of rats.

Fortunately, there are large endowed research laboratories devoted exclusively to the study of cancer at Buffalo, Boston, St. Louis, New York, Chicago, Pittsburgh, and other places at home and abroad, devoting their whole energies to the study of cancer. Some day they will discover its origin and cure as well. For the present, we may more profitably concern ourselves with the exciting causes and treatment.

Cancer is Always Local at First:—The most important thing for the laity to understand about cancer is that *it is always a local disease in the beginning.* Of course, we have known this all the while, but it is not generally accepted by those who have the disease. Upon this one fact hinges the cure. I might say it is "the law and the gospel" of the treatment of cancer. I cannot stress this great truth too much. No matter in what part of the body cancer starts, *it is there and nowhere else.* The idea that cancer is in the blood from the very first is erroneous. Let us tell the people that it is as false as the righteousness of burning witches. Let's get this fact firmly fixed in their minds. Regardless of what they have heard old people say, cancer is always a local disease when it first appears.

Cancer is a Blood Disease Only Secondarily:—The second fact of importance is that later *cancer does get into the blood*, and becomes disseminated throughout the whole body. When this takes place, it is liable to "break-out" anywhere. This breaking out of cancer in parts of the body distant from the original site is called "metastasis." These are the cases that are absolutely incurable.

Infection Takes Place Through the Lymphatics:—The invasion of the general system takes place usually through the lymphatics. Even the laity know that a sore anywhere on the hand causes a "kernel" to form under the arm. Kernels are glands situated along the line of the lymphatics. The lymphatics are tiny vessels, smaller than the finest sewing thread, that ramify in every part of the body. Their function is to suck-up or absorb any unusual deposit anywhere in the

body. They carry the absorbed material to the general circulation, where, if it be poisonous, and it is possible to do so, it is neutralized by the various organs such as the liver, otherwise, we would have far more deaths from ordinary blood poisoning than we do.

In like manner, the cancer cells are picked up by the lymphatic vessels and carried along toward the general circulation. When they reach one of the glands (kernels) they are detained for a while; but finally they break through and are poured into the large veins at the root of the neck. Having gotten into the general circulation, they are liable to lodge anywhere in the body that a blood vessel goes, thus producing secondary cancerous nodules (metastasis).

Only recently a man come to me with an extensive cancer on the back of his hand. He said he had had "a wart" on his hand for two years and that only lately had it began to trouble him. When I went to operate upon him, I remembered two of the facts I have just been discussing with you, namely: that cancer always begins locally and that it gets into the system through the lymphatics. Therefore, the first thing I did was to remove the lymphatic glands (kernels) from his axilla. I knew that if the cancer cells had not reached the axillary lymphatic glands they had not invaded the patient's body, since there was no other way for them to get into his system except through those glands. Unfortunately, when we put the excised glands under the microscope, we found them to be cancerous. Therefore, I had the sad duty of telling the patient, who was an important citizen, a husband and a father, that, although I had removed the glands and had destroyed with the hot iron every vestige of cancer on the back of his hand, the chances were that the cancer cells had already invaded his body and sooner or later would develop secondary cancerous growths elsewhere. One minute with a hot iron two years ago would have cured that wart, thereby preventing the development of the cancer. In other words, the best way to prevent a thing is to put a stop to it before it happens. That's an Irish bull, chockful of common sense and science too, when applied to cancer.

Cancers Have a Pre-Cancerous Stage:—This brings us to the fourth item the laity should know about cancer; namely, that *cancer almost always has a pre-cancerous stage.* In other words, it is something else before it is a cancer. Take the case just given. It was a wart for a year or may be a year and a half. It was not a cancer during that time, but it was a *potential cancer*, i. e., it was something that was liable to become a cancer.

In the Mayo Clinic, a large percentage of the cancers of the stomach operated upon are found to be growing upon the site of an ulcer. Before the cancer started there had been a chronic ulcer which had existed for months, perhaps years. The time then to cure a cancer is in the ulcer or pre-cancerous stage; or the wart stage, if you please. Hence, every chronic ulcer, whether it be of the stomach, the lip, the tongue, the nipple, or the bowel, every laceration of the generative organs or elsewhere, must be considered as indicating a potential cancer and should be treated accordingly. The same thing is true of moles, warts, birthmarks, chronic irritations, lumps in the breast, and abnormal growths of any kind, situated anywhere. Unfortunately, after we have removed every visible abnormality, there will still be left enough of internal cancers that cannot be seen, felt or diagnosed, certainly in their incipiency, to make cancer one of the most terrible of all diseases.

Cancer and Chronic Irritation:—It is a matter of common observation that cancer is *closely associated with chronic irritation.* The irritation may be produced mechanically as by means of friction; or chemically, as from the acids of the stomach; or by thermic influences, which may be either heat or cold. As the "constant drop will wear the rock," so a long continued irritation will disturb the relations and growth of the normal cells of which our bodies are composed. The cells begin to multiply with abnormal rapidity. They overlap each other and crowd into the surrounding tissues, thereby producing a hard infiltrated area, or sprout out like a mushroom. In other words, cell growth goes upon a rampage and order gives place to chaos. This condition is malignant and is called cancer. Not being subject to the laws of physiology, which means health, but to the laws of pathology, which means death, it continues progressively and irresistibly until the patient is destroyed.

A few concrete illustrations will indicate the relation between irritation and cancer:

(a) A familiar example is the old man who habitually holds a short stem pipe in his mouth, often producing cancer of the lip. The

irritation here is mechanical from the stem and in part chemical from the nicotine. A broken or rough tooth may do the same thing for the the tongue.

(b) In India, where oxen are generally used as draft animals, the yoke is fastened to one horn and not upon the neck. Cancer of this horn is common, while it is said never to occur in the other horn. This is purely mechanical irritation.

(c) In Kashmir, which is a country situated high in the Himalaya Mountains, where it is very cold, the people wear a small brazier or kangri basket filled with coals of fire, underneath their clothing, next to the skin of the abdomen. Cancer of the abdominal wall occurs so frequently among these people that it is known as the "kangri cancer." Thus, chronic irritation from heat may produce cancer.

(d) Chinamen are said to eat their rice very hot, shoveling it in rapidly with their chopsticks. Cancer of the esophagus, or swallow, among the men of China is not unusual; while the women who first wait upon the men and eat later, when the rice is cool, do not have cancer of the esophagus.

We do not put the yoke upon the ox's horn, nor wear a brazier filled with live coals under our shirt, nor do we all smoke a short stem pipe; but, we do habitually eat our food either too hot or too cold, we have fissures and chronic sores of various kinds, we hold on tenaciously to moles, warts and lacerations, our women hide the lump in their breasts, and fail to appreciate the significance of abnormal discharges, having been told by some kindly disposed indolent doctor that it is the change of life, and we all disregard persistent dyspeptic symptoms. Thus, we travel along through life unconscious of the fact that we are carrying a potential cancer around with us all the while. Furthermore, we constantly irritate such abnormal possessions by ill-fitting dress, improper habits, unwholesome diet, the comb, the razor, etc., all of which may be aptly called "the match of irritation which lights the fire of malignancy." A stick of dynamite in our vest pocket would be less dangerous.

The Cure of Cancer:—There are only three remedies worthy of consideration. They are as follows:

1. Operation.
2. Thermo-cautery.
3. X-rays and radium.

To them may be added the importance of *preventing irritation* at every point of the body, both inside and out. Doctors would call this prophylactic or preventive treatment. It is certainly worthy of serious consideration.

During the pre-cancerous stage, there is no remedy equal to removal of the growth. This will absolutely prevent the development of cancer. If we can educate the public, and some doctors as well, to the full significance of the importance of operating before the cancer actually begins, we will cut our cancer statistics half in two. We may go further and state with all confidence that even after cancer has developed, and while it is yet local, operation will cure at least twenty-five per cent. of the cases and I firmly believe more than that, Hence, the importance of two of the propositions we have discussed with you; namely, that cancer nearly always has a pre-cancerous stage and when first developed is strictly a local lesion.

In the list of remedies, the thermo-cautery runs the knife a close second. We should tell the people that the thermo-cautery simply means a hot iron. The poker heated in the fire will cure many a case of cancer. And how simple it is! But, like operations, to be effective, it must be applied while the disease is still local; or, what is far better, while it is yet a wart.

X-rays and radium are double first cousins. They have much in common, radium being the more powerful of the two. Neither one is a "cure all," while either will cure a large percentage of superficial cancers, provided, of course, that they are still local. Sometimes they will cure deep seated cancers. They at least nearly always affect them favorably. I have used the x-rays for twenty-five years and radium for over two years. I have cured cancer of the breast, sarcoma of the thyroid, as well as many superficial cancers with the x-rays; certainly there was no recurrence *in situ*.

In radium I feel that we have the most powerful remedy ever discovered and I apply it with considerable confidence, but we must temper our enthusiasm with common sense and results.

To my professional brethren who have so kindly and patiently listened to my story, unvarnished as it is with technicalities and scientific discriminations, I would say: "go tell it in Gath," that those who weep may know that "the leaves of the tree of *knowledge* are for the healing of the nations!"

RECTAL ONANISM—WITH REPORT OF A CASE.

By ARTHUR D. OWNBEY, M. D., Newport News, Va.
Elizabeth Buxton Hospital.

History: J. H., white, male, age sixty-three years, seaman, entered Elizabeth Buxton Hospital, December 7, 1920, complaining of a foreign body in his rectum. He stated that on November 20, 1920, while dressing, he was thrown down by the rocking of his ship during a storm. His trousers, which were about half on, touched a stick of wood, tilting it so that it entered his rectum. Attempts were made by the Captain of the ship to extract it, but resulted only in pushing it beyond the sphincter. The patient lost only a few drops of blood following the accident and none since that time. He had eaten nothing but a small amount of oatmeal and had no bowel movement, though he had passed a small amount of mucus. He had been able to feel the foreign body up until the morning of admission to the hospital. The piece of wood, according to his statement, was conical in shape and measured about five inches in length and about one-half inch in diameter at its base, and was used for punching poles in canvas.

Physical examination showed a well nourished male about five and one half feet in height and weighing about one hundred and seventy pounds. The abdominal wall was very fatty, rendering palpation unsatisfactory, although an indefinite mass was thought to be made out in left iliac region, at which point the patient was very tender. No foreign body was felt upon digital examination or seen with a proctoscope inserted six inches into rectum. The mucous membrane appeared normal. An x-ray examination of pelvis and lower abdomen was made with negative findings.

A communication from the British Consul caused us to doubt the statement made by the patient.

He was given one ounce of castor oil on admission and one ounce of mineral oil three times a day before meals. Within twenty-four hours after admission, he had a large, normal stool and his defecations were normal each day afterward. For eight days following his admission, his temperature was one hundred degrees F. at eight o'clock in the evening. He complained of no discomfort, but appeared depressed. On December 17th, twenty-seven days from beginning of his illness he notified me that he could feel the stick with his finger. I made a digital examination and could also feel a foreign body pressing aginst the coccyx. By means of a large pair of Ochner's hemostatic forceps, I was able to deliver a smooth piece of wood, conical in

Sketch gives an idea of outline and proportionate size of the foreign body.

shape and measuring nine and three-eighths inches in length, one and five-sixteenths inches in diameter at its larger and one-half inch in diameter at its smaller end. He was discharged on December 21, 1920, apparently none the worse for his experience.

Discussion

This case is an interesting one because of the size of the foreign body and because there was so little apparent injury from its introduction into the rectum and following its long stay in the colon.

It is hardly conceivable that such an accident as described by the patient could have happened without more injury to the anus and rectum.

After considering his age and his occupation and the fact that he received apparently no injury, we concluded that his was undoubtedly a case of rectal onanism or rectal masturbation.

The most frequent victims of this accident

are old men, young children and neurotic females. It is more frequently practiced, however, by men who, for some cause, have lost their sexual power and can not obtain satisfaction in the natural way. Sexual orgasm may be produced in this way, evidently, or this particular type of sexual pervert would never yield to such a disgusting and painful act. It is further shown that some sexual gratification may be produced by the fact that passive pederasts yield readily or may even pay a person to assume the active part.

The most common objects used in rectal masturbation are candles, bottles, fingers, walking sticks, rectal bougies, or any smooth object which may be introduced into the rectum with the minimum amount of pain.

Many pathological conditions may follow the habitual practice of this perversion. The most common are: weakening or destruction of sphincter muscle, prolapse, fissures, ulcerations, injuries of mucous membranes, and abscess formations.

Foreign bodies in the rectum may be grouped into three classes: those which have been (a) swallowed, (b) introduced through the anus, or (c) formed in the body. Among the things which have been (a) swallowed may be mentioned: buttons, pins, needles whistles, hair, coins, rings, matches, keys, nails, knives, spoons, snails, crockery, glass and paper: (b) introduced through the anus: sticks, stones, bottles, bandages, syringe nozzles, lamp chimneys, piece of iron, potatoes, jewelry, pencils, ferrules, a pig's tail and other things too numerous to mention: (c) formed in the body: caproliths, enteroliths, gall stones, pancreatic, urinary and prostatic calculi.

Foreign bodies may be introduced into the rectum (a) through traumatism, (b) malice, (c) following depraved sexual manipulation, (d) for voluntary concealment, (e) for curative purposes. These bodies may remain in the rectum for a few hours, days or months and, occasionally, years. Pain, fever, constipation, hemorrhage, genito-urinary disorders and inflammation about the anus are among the symptoms.

Various methods have been used to remove these foreign bodies, such as laxatives, soap suppositories, enemata, etc. They may be grasped with the fingers or forceps. It has become necessary in a few instances to divide the sphincter and to excise the coccyx to provide ample room for extraction. Laparotomy has been done in a few cases, but has been resorted to only in those cases where the foreign body was in the upper sigmoid or transverse colon, or when perforation of the bowel had resulted.

References

R. H. Fowler, Internatnonal Jour. of S., Volume 27, page 210, 1914.
Gant: Diseases of Rectum and Anus, page 645, 1902.
N. S. Bonard: Lancet, London, Volume 1, page 185, 1917.
Stork: Brit. Med. Jour. Volume 1, page 15, 1916.
Eliot: Wash. Med. Ann., Volume 15, page 35, 1916.

THE SPLEEN IN SURGERY.*

By CARRINGTON WILLIAMS, M. D., Richmond, Va.

In early embryonic life, the spleen is developed from mesodermal tissue located near-by that tissue which forms the frame-work of the liver as it grows from the foregut. This close relationship to the liver is quite significant, for these two organs function together in later life.

The spleen is made up of lymphoid tissue suspended on a loose reticulum, and has large blood channels which are in intimate connection with this lymphoid tissue. It has no lymph channels except a few in the capsule. This capsule is made up of dense connective tissue, and contains smooth muscle fibers ennervated by the sympathetic and vagus, and capable of slow rhythmic contractions.

The physical connections of the spleen are largely through the blood channels, which are of such significance as to deserve review. The blood from the coeliac axis and the two mesenteric arteries is returned in veins which unite to form the portal vein, and this empties by division into capillaries in the liver. The artery to the spleen is the largest branch of the coeliac axis, while the bulk of tissue supplied by it is smaller than that supplied by the hepatic or the gastric. This blood supply, therefore, may be considered to be excessive in the sense that the blood supplies of the kidneys and of the thyroid are excessive. The blood from the spleen, however, must pass through the liver before it reaches the general circulation.

The nerve supply of the spleen comes from the sympathetic system and the vagus.

The relation of the spleen and liver in action has been compared to the glomeruli and tubules

*Read before the Tri-State Medical Association of the Carolinas and Virginia at Norfolk, Va., February 22-23, 1922.

of the kidneys, for the spleen extracts from the blood certain products which it passes on to the liver for disposal. This is true not only of waste products, but also of certain substances which the liver must return to the body to maintain normal life. With regard to the latter function, the spleen may be considered as a "scrapping plant," where the worn-out blood cells are delivered to have removed whatever may be of further service to the body.

Gato, in animal experiments, found that the amount of pigment in the bile was relatively diminished after splenectomy, both with and without the administration of a hemolytic agent.

It is interesting to note that the absence of the spleen increases the endurance of the animal; this has been demonstrated, and is said to have been known by the Romans who removed the spleens of their runners to increase their wind.

In prenatal life, the spleen actively produces red blood cells, but this function is lost after birth, and its blood producing power is limited to lymphocytes. It still performs a valuable part, however, in red-blood production by removing from the circulation worn out erythrocytes and passing on to the liver the iron removed from them to be in turn used by the blood-forming elements in new cells. After removal of the spleen, there is a period of anaemia followed by a return to normal; during this period of recovery, the other lymphatic glands assume the work of the spleen.

The spleen assists in producing immunity. This is indicated by experiments in which Morris and Bullock have demonstrated that splenectomized rats were more susceptible to ordinary infections, and to sublethal injections of live bacteria, than were others on whom abdominal castration had been done for controls. It is well known that the spleen can filter from the blood parasites of disease, but it cannot destroy these organisms. Probably the most striking example of this is the accumulation of plasmodia of malaria, the ague cake of the tropics. The same is true of the spirochaeta pallida. The enlargement of the spleen in typhoid fever and chronic infections is due to the accumulation of bacteria and the reaction to the infection. This reaction of the spleen is usually of a chronic nature, and consists largely of a thickening of the reticulum and the blood vessels. Lesions typical of the disease, however, may be produced as is best illustrated in tuberculosis.

The mechanical condition of the spleen such as rupture, traumatic injury, and displacements, as well as the rare cysts and new growths, will not be considered except to say that they demand and have consistently received surgical relief.

Banti described an anaemia with splenomegaly and cirrhosis of the liver, which he considered due to an infection of unknown origin. This definition of the disease is still adhered to, although, since his time, the cause of the infection has been discovered in some cases, and this removed from this classification.

The infectious origin of the cases remaining as Banti's disease, or splenic anaemia, has not been demonstrated, yet the similar clinical picture to those of known infectious origin cannot be other than impressive. The pathology in the spleen is that of a chronic infection and the liver is cirrhotic. This cirrhosis accounts for the varicosities in the portal system and the hemorrhages from the stomach.

The course of splenic anaemia is illustrated by the following case:

Miss E. G. Age 17. First seen June 8, 1921, complaining of enlarged spleen, anaemia, and hemorrhages.

Family History is unimportant.

Past History: She has never had any illness of note except the present trouble. Appetite and digestion have always been good. There are no urinary symptoms. Menstruation has been quite irregular until eight months ago, since which it has come monthly.

Present Illness: Eight years ago her abdomen became quite large, apparently from fluid. Previous to this, she had complained of soreness in the upper abdomen. After the swelling subsided, large veins were noted in the abdominal wall, and the spleen was found to be enlarged. She soon afterwards had a large hemorrhage from the stomach, and for several days passed old blood in her stools. These hemorrhages have occurred since at intervals of three or four months. She has always been pale, and skin has had a lemon tint. She has grown normally in stature. The spleen has slowly increased in size. During the past two years, she has been treated by an osteopath and has not had a hemorrhage for the past eight months.

Physical Examination: Patient is a fairly

well developed and nourished young woman appearing chronically ill. Pupils equal and react to light; conjunctiva good color. Tonsils do not appear diseased. Teeth in good condition except one decayed molar.

Chest: Expansion good. Heart and lungs negative. Abdomen is moderately distended, and a number of large veins appear on the left side. Sharp, hard edge of the liver is palpated one-half inch below the costal margin. The left upper abdomen contains an enlarged spleen, which extends to the midline in the epigastrium, and downward to a line just below the umbilicus. No fluid demonstrated in abdomen.

Extremities normal. Knee jerks present.

Laboratory Examinations: Urinalysis negative. Blood count: Leucocytes 4,000; Polymorphonuclear 69%; Lymphocytes 23%; Large Lymphocytes 6%; Eosinophiles 2%; Red cells 4,520,000; Hemoglobin 40%; a few microcytes and poikilocytes were seen. Blood Wassermann was negative. Urine was negative for urobilin. Hemolysis test: Hemolysis begins in concentration of 0.45%, and is complete in 0.25%.

Diagnosis: Splenic anaemia of Banti.

She was advised to have the spleen treated with radium and later removed. Dr. W. J. Mayo saw her in consultation on October 22, 1921, when he was in Richmond, and agreed to the diagnosis and treatment outlined. She had another severe hemorrhage in October, and returned two weeks ago for treatment. Radium was applied over the spleen by Dr. S. W. Budd.

This case has the cardinal symptoms of splenic anaemia. The anaemia is of the secondary type, and is due probably to a failure on the part of the spleen to deliver the blood pigment so that the cells produced are of poor quality. The red cells, however, are more resistant than normal, as evidenced by the diminished fragility to salt solution.

If we proceed on the theory that the spleen is harboring an infection picked up from an unknown source, we must conclude that removal of the spleen will cure the patient. This is borne out by the results in the splenomegalies of known infections. It is also borne out by the results of splenectomy for splenic anaemia, but the success of the procedure is dependent on the amount of damage already done to the liver and the portal circulation. Giffin has recently published the results on seventy-one cases of splenectomy for splenic anaemia done at the Mayo Clinic. There was a hospital mortality of 12.6%, and subsequent death of 31%. Of the remaining forty cases, twenty-eight were heard from and twenty-seven were in good or fairly good condition.

On account of the adhesions usually present in this condition, and in the septic spleens, the operation is made more difficult and hazardous than those cases where the spleen is free. The size of the spleen formerly added to the risk, but now this can readily be reduced by application of radium before the operation is done.

Tuberculosis when localized chiefly in the spleen, syphilitic splenomegaly which does not respond to treatment, and the spleen of chronic malaria, have all been successfully treated by splenectomy. These conditions present pictures practically identical with the splenic anaemia of Banti.

Hodgkin's disease involves a large part of the lymph glandular system. Several efforts based on much evidence have been made to show that this disease is an infection. There are other atypical lymphatic enlargements that appear to be infections; they may be illustrated by the following case:

B. D. Age 11 years. Was seen on October 11, 1921, complaining of swelling of the neck and abdomen.

Family History negative.

Past History: He has never been sick before; he has always been strong and worked on the farm.

Present Illness: Three months ago his left foot and ankle were crushed under a heavy barrel and became infected. Several incisions were made, and have resulted in sinuses which drained pus. There has been no marked enlargement in the groin. During this time, he has had fever, chilly sensations, and sweats, and has lost weight. Ten days ago, a swelling appeared in neck; this has increased in size and has extended over his upper chest. His abdomen has been quite distended. Breathing has been difficult.

Physical Examination: Patient is a boy of eleven years, with large swelling in neck, appearing chronically and severely ill. Conjunctiva pale. Teeth dirty. Tonsils small and do not appear diseased.

The left side of neck, extending from parotid region across the midline in front and downward to root of neck, is filled by a brawny edematous mass. This mass is not red, and

there are no discrete nodules. Chest showed a small amount of fluid on each side, otherwise heart and lungs were negative. Abdomen is not distended. Liver, spleen and kidneys were not palpated. There was no mass or tenderness, but a small amount of free fluid was present.

Extremities: Left leg is smaller than the right. On the inner side of the left ankle and the outer side of the foot, are small sinuses practically healed. No edema, swelling or tenderness about these sinuses. The lymph glands of groins, axillae and epitrochlears are moderately enlarged.

Laboratory Examinations: Urinalysis: Cloudy; 1,012; acid; albumin heavy trace; sugar negative; miscroscopic—a considerable amount of pus, many hyaline, gramlar, and waxy casts.

Blood Counts Red cells, 3,600,000; Hemoglobin 54%; Leucocytes 17,400; Polymorphonuclears 64%; Lymphocytes 18%; Large mononuclears 4.5%; Eosinophiles 13%; Mast cells 0.5%. Blood Wassermann negative. X-ray of chest showed very heavy shadows about the roots of the lungs with wide mediastinal shadow, due probably to lymph glandular enlargement.

A lymph gland excised from the right groin was examined and reported atypical malignant lymphoma. The neck was exposed to 50 mg. radium in four separate areas with a total of 400 mg. hours. While in the hospital, his temperature ran from ninety-eight degrees F. in the morning, to one hundred degrees F. in the afternoon.

He was advised to return for further radium treatment, but his father stated in a letter two months later that he was entirely well. He said that the swelling in his neck had broken down and drained, and rapidly subsided, while the boy gained strength and weight. Except for the pathological examination, we would be inclined to doubt the gravity of the condition, but the specimen was examined by several competent pathologists who agreed that it was a malignant condition, although they could not agree on a name for it.

In these conditions, the spleen pathology is so small a part of the whole that little could be expected from its removal. Marked improvement results, however, from radium treatment; unfortunately, the improvement is usually temporary.

In hemolytic jaundice, excellent results have followed splenectomy. Giffin reported thirty-two cases with one hospital death, and twenty-six patients in good or fairly good condition.

In pernicious anaemia, the spleen does not predominate in the pathological process, and the results of splenectomy are correspondingly less encouraging. Reports indicate, however, that life expectancy is increased a few years, while the immediate mortality is not high. Following the operation, there is a remission of a variable length of time.

In the leukaemias, the spleen is only a part of the general pathology. Lymphatic leukaemia in the acute form presents a picture of a violent and rapidly fatal infection. In myelogenous leukaemia, the spleen frequently grows to enormous size, but this can be reduced by radium, and splenectomy safely done. As in pernicious anaemia, the results are not encouraging.

The spleen of chronic sepsis offers little opportunity to surgery because, while it may be seriously involved, the infection is in the blood stream and cannot be removed as can the spirochaeta and malaria plasmodia by specific drugs.

Conclusions: The spleen, while not primarily involved in infections, can become a focus by removing from the circulation organisms which it cannot destroy. Such a focus in the spleen causes a destructive process in the liver. While infection cannot be demonstrated in Banti's disease, it runs such a parallel course to known infections as to deserve consideration as such. When the pathology in the spleen predominates, good results may be expected to follow splenectomy as is the case in the known infections, Banti's disease before extreme cirrhosis of the liver is present, and hemolytic jaundice.

Where the spleen is an important part of more general pathology, moderate improvement only follows splenectomy, as is seen in pernicious anaemia, myelogenous leukaemia, and late Banti's disease.

Where the spleen is overshadowed by other pathology, no results can be expected from splenectomy, as is true of Hodgkin's disease and similar conditions, and lymphatic leukaemia.

400 *East Franklin Street.*

References.

1. Moynihan, Sir B., Brit. Jour. Surg. 8:307, Jan., 1921.

2. Mayo, W. J., Arch. of Surg. 2:185, March, 1921.
3. Morris, D. H., & Bullock, F. D., Ann. Surg. LXX:513, 1919.
4. Giffin, H. Z., Med. Clin. of N. Amer., 1919, 111: 765, Minn. Med. 4:132, March, 1921.
5. Giffin, H. Z., & Szlapka, T. L., Jour. Amer. Med. Asso., 1921, LXXVII:290.
6. Hall, M. W., Amer. Jour. Med. Sc., 1920, CIX: 72.
7. Gato, K., Jour. Expt. Med. 26:795, Dec., 1917.

REPORT OF A CASE OF SIAMESE TWINS.

By JOSEPH D. COLLINS, M. D., F. A. C. S., Portsmouth, Va.

Fetal monstrosities, while not particularly rare, are always interesting, and it is my good fortune to be able to report the following case of sternopagus, or "Siamese Twins."

M. P., colored, age 34, secundipara, was sent to the hospital on November 12, 1921, with the diagnosis of "locked" twins. Her attending physician had spent some hours in endeavoring to deliver her. The previous labors had been entirely normal. Upon examination, I found four legs protruding from her vagina.

Not recognizing the condition present, an attempt was made under deep anesthesia to return one of the fetal bodies to the uterus. Failing to accomplish that procedure and suspecting that I had to deal with a monstrosity, I then made simultaneous traction on all four legs, bringing both bodies down until the true condition was revealed. An immediate Porro Caesarean section was done.

The twins were full term and fully developed. Both were girls. They had evidently been dead for several hours. They were united anteriorly from the umbilicus to the upper extremity of the sternum, the union consisting of a broad fusion of the bodies beginning from a point one-half inch inside the nipple line of each side. The combined weights were fourteen pounds. There was one cord and one placenta.

The mother made an uneventful recovery, and left the hospital on the eighteenth day.

314 *Court Street.*

UTERINE FIBROID TREATED WITH RADIUM.*

By JOSEPH J. MUNDELL, M. D., Washington, D. C.

In reporting this case of uterine fibroid treated with radium, it is hoped that the impression will not be given that the writer thinks that all fibroids should be so treated and it is also hoped that the type suitable for treatment will be made clear, for that there is a well defined class in which good results are obtained is undeniable and indisputable.

The contra-indications to this method of treatment are as follows:

"A tumor larger than a four months' pregnancy; a tumor that is fixed or adherent, resulting from an inflammatory process; a tumor which is pedunculated or one on a pedicle; a tumor in which there is associated any pelvic inflammatory disease, recent or chronic, for radium is prone to light up such; a definite myoma in a young woman, for fear of destroying the possibility of child-bearing; a tumor which suggests malignancy; a tumor which cannot be mapped out by bi-manual examination or a tumor accompanied by chronic pain."

In view of such an array of contra-indications, it might be assumed that radium can be used only in an isolated case here and there, but such is not true for there are a large number of cases in which it is indicated. Boiled down, the type of case in which the most favorable result is obtained is a symmetrical tumor, not larger than a four months' pregnancy, in which no adnexal disease is present and the symptom for which the patient presents herself (around the menopausal age) is bleeding. Such a case is the one here reported.

*Read before the District of Columbia Medical Society, October 26, 1921.

Frequently, small fibroid tumors are found which are causing no symptoms whatever. The conservative surgeon will advise a watchful waiting policy in the treatment of such a case, for why subject the patient to the known dangers of a hysterectomy, unnecessarily? Even in skilled, as well as in unskilled hands, there are certain risks, for embolism always looms up forbodingly in the background. Such serious complications, you may say, are infrequent, not more than 2 per cent. in skilled hands, yet there are still many unpleasant sequelae coming before our minds, among a few of which may be mentioned protracted convalescence, 3 to 6 months, backache, cystitis, hernia, etc.

If a small fibroid causing no symptoms should begin to bleed, producing a more or less severe anemia, what would be the choice of treatment? If we have at hand an efficient non-operative method, should it be given a trial? If it fails, the most that can be said against it is that hysterectomy has simply been postponed.

The following is the case report:

On June 13, 1921, I saw Mrs. M., aged 41 years, married 15 years, no pregnancies, usually enjoyed good health. In October, 1914, operation, myomectomy, a small myoma on the post-uterine wall being removed, and appendectomy. For six months previous to operation had complained of hemorrhage at menstrual periods. For two years following operation her general health was much improved. For the past two years periods have been every 20 days with excessive flow. At the last two periods there was flooding. Feels fatigued and is easily prostrated. Has been taking citrate of iron hypodermically for the past two months.

Examination: Well developed, but very anemic woman, weighing 135 lbs., chest negative, lower abdomen contains a hard smooth movable mass extending two-thirds the way to the umbilicus.

Vaginal Examination: Cervix small and soft, fundus is enlarged to size of four months' pregnancy, is symmetrical and movable—appendages negative.

Diagnosis: Uterine Fibroid.

She was given the choice of hysterectomy or radium treatment, the latter of which she chose, largely on account of the memories of her operation in 1914.

Accordingly, on June 28, 1921, under gas anesthesia, 50 mgrm. of radium was placed within the uterine cavity, remaining 24 hours. A diagnostic curettage was done at the same time, and examination of the curettings for malignancy was negative. Four days later, after a very enjoyable stay, she was discharged from the hospital. She has since menstruated only twice—July 8th and August 8th—neither profusely.

On October 7, 1921, the patient has gained 21 pounds, now weighing 156 pounds, is the picture of health, and feels better than for years, though she has occasional hot flashes. The tumor seems to have been reduced in size, I should say about 30 per cent.

The blood examinations are as follows:

June 20, 1921:	Hemoglobin 50%
	Red Cells, 3,580,000
	White Cells, 7,300
July 25, 1921:	(4 weeks after radium)
	Hemoglobin 75%
	Red Cells, 4,390,000
	White Cells, 5,400
Oct. 7, 1921:	Hemoglobin, 85%
	Red Cells, 5,975,000
	White Cells, 8,900.

I submit to you that the foregoing demonstrates that in this we have a method that is eminently safe, sane and successful.

1616 *Rhode Island Ave., Northwest.*

REFLECTIONS ON MEDICAL ETHICS.*

By DAVIS FURMAN, M. D., Greenville, S. C.

With your permission I will take you away from the routine of shop, for a ramble in another realm of medicine, and I feel that I have another apology for this digression.

Since nation-wide publicity, reaching to every obscure cross-roads newspaper in the land, has been given to a speech delivered a few days ago by that otherwise useful man, Royal S. Copeland, reflecting on Medical Ethics, it is time for the profession to take notice, as it indicates that some at least, besides the "I know its" have little conception of the real meaning of the term. When a man like Copeland gives voice to such statements as "the Code of Medical Ethics is the most antiquated, moss covered, germ ladened institution

*Read at the meeting of the Tri-State Medical Association of of the Carolinas and Virginia, in Norfolk, Va., February 22-23, 1922.

in the world" and that "the so-called Code of Ethics of Doctors, who make a secret of cures of various sicknesses and the profession through the ages which has chosen to make itself a secret thing and who alludes to the dark secret things of the profession" (perhaps because some medical men were small enough to fight the work of the justly renowned Lorenz), by his own language convicts himself of what it is charity to ascribe to simple ignorance on the part of its author.

Is it possible to think of Jenner as the collector of Croesus-like royalties on his vaccine discovery, or of Pasteur demanding cash for his method of preventing hydrophobia? or of Behring withholding from dying children, for blood money, his discovery of diphtheria antitoxin?—not to mention hundreds of others who have conferred boons on man?

No! the most emphatic tenets of Medical Ethics have always been to gladly and freely hand to humanity whatever has been discovered for the alleviation or cure of disease and to condemn as despicable quacks all "who make a secret of cures."

Having had requests for reprints of an article read some years ago, the subscriber has determined to again inflict it on his friends. The liberal retouching with colors from the masters may have destroyed its identity, changing the original fabric into a veritable "Joseph's Coat." Though it lacks symmetry, it may serve to help some to keep in harmony with their environment.

Lapse of time has dimmed and made inroads on the old copy therefore no bibliography will be attempted. If the paper appears platitudinous or pedantic to some, the writer will not be surprised. If, perchance, in any instances, the language and ideas of another are used, without giving due credit, to such we humbly apologize; if it proves helpful to any one, its mission is accomplished.

No attempt will be made to give a resumé of the rules of Medical Ethics. Having, however, reached the point in life where the retrospect is greater than the prospect, we shall indulge in some generalizations, calling attention to some landmarks which appear noteworthy or conspicuous in review. Without thought of presenting anything new on this old but most important phase of medicine, we shall attempt to collate from the great literary storehouse, a few half-forgotten inspiring excerpts, legacies from sages and scholars, in and out of the medical profession, which have more or less bearing on Medical Ethics. Some well known rules will be reiterated for emphasis, which seem especially to tend in their strict observance to smooth the asperities of the professional pathway.

Such heritages from the wise, as well as the written evidences of lofty ideals from our profession, who, during the ages, have held aloft the Caduceus of Hermes, are sometimes overlooked in the cares and drugery of professional life. Some, therefore, are to be found, with heads more or less burdened with scientific acumen, who show unpardonable ignorance of their duty to the community and to the profession to which they belong. Such one-sided tendencies can but be deplored.

In a classic address on the relation of the physician to the public and to his colleagues, delivered at Oxford in 1846, Dr. Huefland said "An instinctive impulse to relieve a sufferer was the origin of the healing art, and to make medical practice answer its ideals, this pure and noble sentiment must always prevail."

From this fundamental concept he deduced the following law—"Regulate all of your actions in such a manner that the highest end of your calling, which is saving life, restoring health and relieving the sufferings of humanity, may be attained as far as possible." The subtle influence of one inspired thus is a benediction to both the public and to his profession.

The lamented Dr. Osler said in reference to the public, "There is a delightful Arabian proverb, two lines of which run—'He that knows not and knows not that he knows not is a fool,—shun him. He that knows not and knows that he knows not is simple—teach him.'" It is our province to have to deal with the extremes of civic life. "We must fight the wilful ignorance of the one, and the helpless ignorance of the other,—not with the sword of righteous indignation, but with the skillful weapon of the tongue. On this ignorance, the charlatan and the quack live."

The incomparable Fuller wrote "Well did the poets feign Aesculapius and Circe, brother and sister, for at all times (in the opinion of the multitude) witches, old women and imposters have had a competition with doctors!"

In the fight with the inexorable, "the last enemy," whether the weapon of fate be hydrophobia, aneurism, or failing compensation, the attendant is often rewarded by the public for

his anxious hours of self-sacrificing toil with criticism and reproach for his failure, and often, as far as the public appraisement goes, verifying the lines of Emerson—

"The valiant warrior famoused for fight—
After a hundred victories once foiled,
Is from the book of honor razed quite—
And all the rest forgot for which he toiled."

No honest physician will, by silence, give *quasi* sanction to such ungenerous conduct towards a colleague. It is unprofessional and ignoble to fail to defend the reputation of an absent brother when justice demands it. Well has it been observed, "He who degrades a colleague degrades his art."

In changing from one physician to another it is common for patients to attempt to justify their course by speaking ill of the former physician. No physician should permit such criticism. The porcupine attitude towards other physicians and petty quibbling only furnish material for jocose remarks from the public and add nothing to a vocation which holds a sacred trust. Dr. Cathell has well observed, "The great God of Heaven has declared—'Whatsoever a man soweth that shall he also reap'—any one upon whom you encroach in an unprofessional manner will feel himself justified in retaliating with your own weapon, and you will reap a crop similar to the seed sown. Whenever you sow a thistle or thorn, you will reap thistles or thorns; whenever a wind is sown, a whirlwind will be reaped, whilst the sweeter seeds sown by others will yield sweeter fruit."

Compared with the revenues from other vocations, to the great majority of the medical profession the remuneration is pitiably small, especially when the grave character of the service is considered and the exacting demands it entails. Necessity demands that the business side must be looked to, not truckling to wealth, for this only furnishes opportunity for gibes from the factious scribe,—as many years ago the great Bard observed "The learned pate ducks to the golden fool." To some this may appear a warranted accusation, but to the real physician, "What is a handful of gold compared to the tears of gratitude shed by the poor who, unable to speak or give, pours out a confession of eternal indebtedness, while the rich man often believes himself redeemed by payment of all obligation of thankfulness?" Whether due to that innate instinct, previously referred to which leads one, or to the subsequent intimate association with humanity unmasked by the joys and sorrows of life's drama, the tense moments which mark the climax of exultant joy, or the pathos of abysmal sorrow, certain it is that the physician, excepting the implacable mercenary, whose ultima Thule is the paltry dollar, occupies a stratum of unselfishness and altruism above the average man.

To one donning the toga of Aesculapius, especially where the role of general medicine is assumed, the temptations of social life and the lure of society, in the main, become the music of sirens, to which a deaf ear must be turned. On the other hand, the cry of anguish, or the moan of suffering, and the prevention and relief of human ills, always demands precedence, commanding time, ability and skill. The recompense comes, not from social triumph, nor the fascination of toying with the power of mammon, but from that source of most genuine pleasure, viz., the consciousness that in preventing and alleviating suffering his talent or talents are being used to the best advantage and that he is contributing his full quota to the progress of the race and towards the promotion of the happiness of others.

Whatever the ability and training, when that complication of the physical and the psychic arises, which constitutes the mechanism with which we must deal with the many unknown elements entering into that problem of problems, human life—baffling often in their subtleness those best qualified by education and natural capacity,—is it any wonder, especially when under most unfavorable circumstances a hasty judgment is imperative, that the proper value of the x is not alway reached?

The exalted ego is suggestive of a psychosis. It is safe, therefore, to postulate that the normal mind recognizes many mistakes, some of which may remain deep and lasting sources of regret. To exploit such misfortunes in others, is an unwarranted assumption of infallibility, is unjust, and stamps, at least, as narrow the one so doing. Should the incentive for such unkind criticism be retaliation, it will be well to recall the cogent words of Milton—

"Revenge that first tho' sweet,
Bitter ere long back on itself recoils."

Macauley has well said, "No reports are more readily believed than those which disparage genius and soothe the envy of conscious mediocrity." Envy, jealousy and malice, attributes of the weak and vicious, are never steps to professional greatness, neither can the

wreckage of character of one's confrere be converted into a ladder to professional heights.

Disparaging allusion to the ignorance of the past does not commend one, for the world knows centuries were required to produce one Hippocrates, a Jenner, a Pasteur, and a Sims, not to mention the few great now living, and that the vaunted perfections of today will be viewed by the medicine of the future much as we contemplate prehistoric man's stone age. It ill becomes one—granting "all the world's a stage"—during the few ticks of the clock that he occupies the center of the footlights, to depreciate the efforts of another, who is just emerging from the eastern curtain, or of another whose lengthening shadows presage that he is close on the "hindmost wheels of Phoebus."

The opinion of the public, in matters relative to which it is in position to know little, is formulated and moulded by the attitude of such representatives of the class with which it comes in contact. It would be an illusion, therefore, to assume that the impression of the profession in general could be exalted in the public mind when some of its votaries do not avoid the semblance of mysticism; that they do not secure the co-operation of their intelligent clientele by candid explanations and instructions whenever feasible; that they voluntarily catalogue themselves with Doan, Tanlac and other of nostrum notoriety by permitting their names to be made trade-labels for pills, powders or lotions, thereby contributing to the armamentarium of a class of distinct violators of the law, viz., prescribing druggist, actuated either by well meaning complacent ignorance or sordid motives, in either event proving insidious enemies to humanity.

Another Judas sometimes exists who falsifies symptoms to promote surgical fees; or still another, who takes advantage of the beneficient effort of health-boards, looking to the reduction of deaths from diphtheria and other diseases, by furnishing free serums, etc., and yet disposes of such, often in spurious cases, for his personal gain. And far worse, some prostitue their vocation and, under an honorable flag, enter into clandestine compact with not less venal surgeons in order that, in the language of their bolder though less hypocritical brothers, they may "50-50 the swag" or "whack the loot," not to say fee, thus surreptitionsly extorted from their trusting and unsuspecting patients.

Such despicables are foul spots on the escutcheon of a profession of noble aims and attainments. Its laurels are securely won, not resting alone on humanitarian or idealistic grounds. Its far-reaching achievements from a human progress and economic viewpoint can not be questioned. The limitation, if not the practical elimination of Asiatic cholera, typhus and typhoid fevers, diseases of children, diphtheria, bubonic plague, smallpox, yellow fever, hydrophobia, etc., the records of which furnish the most gruesome pages in the history of man, establishes our position in the minds of the reasonable. And the saving by surgery of life, limb and function, during the great war, furnishes a new chapter of marvels convincing to all but the deluded followers of strange gods.

The above animadversions have reference in the main to the derelictions of medical men. Yet the laity bears no negligible part, by misleading if not false statements, as a causal factor of discord among the ranks of the profession.

Gratitude, the highest reward for service, is more or less discounted as an asset by the veteran. To those holding the view of Brook—

"If there be a crime
Of deeper die than all the guilty train
Of human vices, 'tis ingratitude."

A shock may come, for the physician is fortunate if he never recognizes, among his most truculent critics, some for whom he has made sacrifices and contributed his best efforts. There are many modest doctors who after jeopardizing life in storm and flood have single-handed faced the grim monster, and by that fight have stayed his progress and saved one or perhaps two lives. He wears no Carnegie hero medal—not he—often he does not receive the pittance of a fee for his great service.

Apropos to the above, that modest man and graceful writer, Ex-Vice-President, Thomas R. Marshall, in an article presenting his philosophy of life, paid a classic tribute to our profession in his allusion to his own father. I will take the liberty to quote in part:

"Early in life I learned that it was possible to be great in a number of ways and also that success depended upon the personal viewpoint. I had four uncles who went into the Union Army during the conflict between the North and the South. Each rose from the ranks to a captaincy. Three of them died as the result of wounds received in that conflict. My father was physically unfit for military

service. During all that long and awful conflict, in the malaria-infested districts of northern Indiana, through scorching summer days and bitter winter weather, he followed his calling, ministering to the sickness of the wives, widows and children of those who were at the front, and refusing all compensation therefor. He contracted the disease which finally led him to the gates of glory, by riding in the face of a storm blowing fifty miles an hour, with the thermometer twenty degress below zero, to act as patron saint at the birth of a soldier's boy in a log cabin, where a pail of water froze solid on the side of the bed away from the fireplace. To all the other members of our family my uncles were heroes and great men, my father just a commonplace relative. But to me, he was the great man, and to this day I would not exchange his old medicine chest for all my uncles' epaulettes and spurs and swords."

The Pysician's Responsibility.

From the physician, the public has a right to exact efficiency in diagnosis, treatment, and prophylaxis. To meet these requirements, every available aid must be invoked to properly interpret the intricate symptoms at times encountered, not forgetting that abstract science is nothing unless it be hand-maiden to an analytical mind, common sense and sound judgment; and perhaps something else. However, genius may be defined, certain facts stand out conspicuously; that ambition, energy, persistency and knowledge of colors are not sufficient to create a masterpiece in art: that the poets whose work bears the stamp of everlasting life make a short list; that music has few stars; that to the genius of Napoleon, Foch gave credit for his recent conquest; that inventors whose names are immortal are rare; that study of the national game and practice by millions have produced one Cobb, one Speaker and a Ruth; that the trap, where sight and instant co-ordination are essential, have furnished few over 95% shots; that in sidereal observations, approach to accuracy varies with the individual. In other words, study and training serve to reduce the personal equation, but few indeed have the essentials to entitle them to a place in the Hall of Fame as diagnosticians.

The human body is not alone a culture medium or incubator for micro-organisms, a chemical retort, but the domicile of that elusive phenomenon, life, and, in its highest form is dominated by that even more evasive and enigmatic complex, mind. That cold manipulator of men and master of potential psychology, Napoleon, wrote, "Imagination rules the world," and he is blind who does not realize that in morbid states it is no negligible entity. In disease, occasions arise where the inspiring influence of confidence, a reassuring voice, or other tokens of personal interest and sympathy, are worth more to the sufferer than all the valued aids of cold science combined. Therefore, unless insurmountable barriers exist, the wish of the patient should be law, in the selection of the consultant, after the advisability of such has been impressed by the attendant.

Medicine, having outgrown individual capacity, co-operation has become a necessity. The physician is unfortunate who cannot have easy access to the more important specialist, as well as to the competent laboratory technician.

Group Medicine ideally seems to meet all demands; while it eliminates most of the objection to individualism, its general adoption might tend to foster a more serious class antagonism; it might supply a buoy for incompetents and nurture a spirit of commercialism, whereby the public may be unjustly taxed and the profession disparaged in their estimation. To illustrate that this is not impossible, quite recently a lady of small means was referred to the dental surgeon of a group, rather high on the Mt. McKinley of medicine, for the removal of an outlaw tooth. By mischance she saw the diagnostician who, after sending her down the line for investigation, reviewed the findings, and after an assessment of $240.00, informed her that she had a tooth which must be removed.

The *crucial test* for all conduct, the one law which, regardless of creed or religion, all philosophers and prophets acknowledge as paramount in determining and governing human relationships from a social or economic viewpoint, is the Golden Rule. Make it the standard of measurement for every act; the court of last resort, the final tribunal for every doubtful position, and error will not occur.

Yet, delicate situations present themselves, in which specific rules prove of service in preventing friction between medical attendants, and by harmonizing action serve for the benefit of the patient.

History.

Hippocrates was perhaps first to recognize the necessity of such rules and furnished a system of laws for the general government of the profession. "This code served until Dr. Thomas Percival, an English physician, in 1807 published an admirable Code of Ethics which, except for such alterations as were made necessary by the lapse of time and the advancement of medical science, is the identical Code adopted by the A. M. A. in 1847, and from then to a few years ago has governed our whole profession, just as the Ten Commandments of Holy Writ instruct and restrict mankind in general." With slight alterations, this is incorporated in the "Principles of Ethics," the present law. Copy of the same, as well as answers to any mooted question of ethics, may be secured by writing to the Secretary of Notes and Queries, *Journal A. M. A.* Chiefly for the sake of emphasis, the writer will quote some pargraphs from "The Principles of Ethics," which bear on some of the most common causes of misunderstanding, and mention some collateral rules or customs which seem to be of value.

First, we will note that the public weal, as well as the determination to purge the profession of the unworthy dictates, that those cognizant of violations of the law intended to regulate the practice of medicine, shall take positive legal steps towards the punishment of the guilty.

Emergency Cases.

Reference will be had first to these as there is no more fruitful source of variance. Article IV, Sec. 5, of "Principles of Ethics," contains this, which should be constantly borne in mind. "When a physician is called in an emergency and finds that he has been sent for because the family attendant is not at hand, or when a physician is asked to see another physician's patient because of an aggravation of the disease, he should provide only for the patient's immediate need and should withdraw from the case on the arrival of the family physician, after reporting conditions found and the treatment administered. * * * Even where there is no family physician, never be tenacious of doubtful rights. Where called in emergency, ask the direct question and, if another was preferred, and you were not deliberately chosen, surrender the case to him, even though asked to continue the case. * * * If your conduct towards other physicians is invariably honorable and just, it will be discovered in due time and will make your road pleasant, and, if you ever unwittingly infringe, all will feel that it is through mistake and not intentional."

"When called to a case previously treated by another physician, especially if patient and friends are dissatisfied with the previous attendant, never express a wish that you had been called sooner, or criticise his conduct or remedies; it is mean and cowardly to do either."

Never take charge of a patient under care of another physician without first ascertaining that he has been formally notified of the change; otherwise, unless great emergency exists, you should positively refuse to interpose. If you consent, it should be done for the attending physician, and you should leave a sealed note telling him what you have done. "Suffer injustice rather than participate in it."

Travail, proverbially problematical, often places itself in the emergency list. Contrary to the rule in other emergencies, courtesy does not dictate that the fee for the accouchement be turned over to the regular attendant. However, the regular physician should be promptly notified of conditions and the after-treatment of the case left to him.

Consultations: So far as the attendant is concerned the disarming of damaging criticism is a desideratum, but above all, "In consultations the welfare of the patient is the highest thought, and every physician should be penetrated by this simple sentiment." What transpires in the consultation room should be held as inviolable as the secrets of the patient acquired as the result of the confidences imposed in the medical attendant. "If thou hast heard a word, let it die with thee: it will not burst thee." The consultant should sedulously avoid making radical changes in treatment unless imperative demand leaves no alternative: for, to the lay mind, such a course is susceptible of but one interpretation.

The consultant should not visit the patient, except with the attending physician, unless by special request of the latter. If unexpected circumstances arise, the attending physician may vary the treatment; not so the consultant, except in extreme emergency or when called from a distance. In that event, a sealed statement should be left for the attendant. A

physician should never take charge of a case when he is consultant, except at the request of the attendant. Some specialists seem forgetful of Article 3, Sec. 4, of the "Principles of Ethics."

Colleague's Patient—Article IV, Sec. 7. When requested by a colleague to care for a patient during temporary absence, or where, because of emergency, he is asked to see a patient of a colleague, the physician should treat the patient in the same manner and with the same delicacy as he would have one of his own patients cared for under similar circumstances. The patient should be returned to the care of the attending physician as early thereafter as possible. Obviously, under such circumstances, for the emergency physician to prescribe a line of treatment to be continued would be a flagrant violation of the spirit of the law.

After thorough consideration of the large accessions to those posing as specialists, often of the Correspondence School variety, the pronounced sentiment of the A. M. A. at its last meeting in Boston favored a course of three years of special work, before any physician should be eligible to be called a specialist in any line of medicine. Such requirement would serve to assure the public that in his branch the specialist, at least, would be better qualified, than the average general practitioner. So far as the specialist is concerned, who as such enjoys the backing of his confreres along with the exceptional emoluments that pertain thereto, and yet enters the list as competitor, perhaps surreptitiously with specialists in other lines or with the great pack-horse, the general practitioner, except in bordedline cases,—we refrain from comment except to say, it is with his conscience, and when the end comes, "Sit tibi terra levis."

It is not out of place to note that a custom honored by time and the best authority, in deference to the mutual dependence of one physician on another, is for brother physicians to extend a graceful courtesy, by taking care of another physician's work, during his temporary absence from sickness or other cause, and, on his return to service, turn over the patient and the fees for service rendered. So far as the fees are concerned, this is not obligatory, yet it gives scope for magnanimity which will be reciprocated. Things done, not per force, are what make the amenities of life. Dr. Cathell says, "There are a thousand unwritten ways to be ethical and a thousand undefinable ways to be unethical." Physicians are no longer aesthetic porcupines hedged about with points of etiquette bristling in fretful expectancy, but are controlled in their natural relations by their instincts as amiable gentlemen and governed by the dictates of common sense. Courtesies in many forms may be extended which tend to engender mutual regard, a deep sense of personal gratitude, and lead to the warmest friendship."

The atavic coming from savage antecedents, that tendency in man to resent by violence injuries real or fancied, is conspicuously manifest in the child and the moron, yet occasionally gets possession of those whose volitions are subject to intelligently governed wills.

Allusions to the paths of peace or suggestions to higher standards of living to some seem visionary and elicit only a derisive smile. Such persons, supine in the fight for better conditions, are but barnacles on their craft,—obstacles slightly impeding the influence of the great motive power towards the right, and add nothing to their profession or country. The history of all truly great is the record of ideals vitalized and consummated.

The word pacifist during the great war was tantamount to, if not synonymous with, slacker. To-day those whose voices are most powerful in advocacy of peace do not represent the slacker class, but, on the contrary, they are the fighting men, the greatest generals, who stemmed the murderous tide of battle and who by personal contact realized the full meaning of brutal conflict—war.

The time is passing, if not now history, when a nation or an individual must needs be weighted down with life destroyers, when the citizen must wear a coat of mail and carry a sword and spear to maintain his property: yea, even the sanctity of his home.

Throughout the civilized world the sculptor's art has been taxed to contribute pretentious arches and imposing bronzes commemorative of deeds of blood, while but few simple slabs have been dedicated to peace. Perhaps the first arch to peace has just been erected on the great Pacific Highway at the international line, in honor of a century of peace between the two great nations of North America. This may signify the beginning of a new era.

With the paint still moist on the canvas which depicts that fearful tragedy, that long premeditated attempt at domination of the world by brute force and the refinement of

atrocious frightfulness, and while humanity in every land is staggering half dazed from the enormity of the blow which destroyed seventeen million lives; and while enormous burdens and blasted hopes are crushing nations, and thousands upon thousands of crippled and starving children are ghastly and pathetic monuments to the worship of Mars, with clouds of chaotic import lowering and politicians whose red flag is League of Nations or (?), wrangling and quibbling over "tweedle dum and tweedle dee," and diplomats playing the cards for gain; philanthropists and statesmen are laboring to forever rid the world of the ideals and customs which mean contempt of the weak, the arrogation of might, or murderous vengeance—war. Let those representing the most altruistic profession be first in the cause of humanity, and, as a profession, "in scorn of miserable aims that end in self," determine, inspired by the spirit of Lincoln, to "go forward with malice towards none, with charity for all, with firmness in the right, as God gives us to see the right," to the end, that our benefactions may be extended, and that we may justly merit this encomium, "The most sublime vocation of man often is that of being high priest of the holy vital flame and administrator of God's highest gifts and the most secret powers of nature, in a word, a physician."

THE DIAGNOSTIC VALUE OF ANALYSIS OF THE URINE.*

By A. I. DODSON, M. D., Urologist,
and
O. O. ASHWORTH, M. D., Resident,
St. Elizabeth's Hospital, Richmond, Va.

In our enthusiasm over new methods and new discoveries we often neglect things that are of equal value. In no instance is this more true than in studies of renal function. In summing up a case in any well directed hospital, we hear much about the output of dye and the retention or non-retention of nitrogenous products in the blood. Often, at the same time, only passing mention is made of the urinary analysis. We also frequently hear the general practitioner excuse his ignorance of the patient's renal status by his lack of access to these newer methods. Although these methods have a definite place in diagnosis and should be made use of whenever possible, they do not take the place of a careful study of properly collected urine. It is both an index of the condition of the genito-urinary system, and of changed body chemistry incident to various poisons and metabolic disorders.

The examination of urine begins with the collection of the specimen. Since the twenty-four hour period is the unit cycle of our physiological existence, it is for most purposes the best unit of time to choose for a qualitative or quantitative output of urine. However, when certain changes are more intense at one period in the day than at another, a special examination at this time will give light where the examination of the twenty-four hour specimen may have failed. In emergency cases, a specimen taken at random may be of great value in differential diagnosis. Traces of sugar in a mild diabetic are most easily found an hour or two after a meal containing carbohydrate. Traces of albumin in the ordinary "nephritic" are most common in specimens taken before breakfast, because through the night the urine attains its highest acidity. On the other hand, in the "orthostatic" albuminurias, such traces are best found in specimens voided when the patient is up and around. The examination should include the quantity passed, the specific gravity, color, reaction, tests for albumin, sugar and acetone, and a microscopical examination of the sediment.

Urine should be examined as freshly as possible, or a preservative, preferably toluol, added. A few minutes may suffice to bring about changes in urine which may be significant; a few hours may bring about such marked changes as to make positive tests meaningless. Urine from an infected genito-urinary tract may, through ammoniacal decomposition, for example, give false readings as to acidity, urea content, presence of casts and nature of the original sediment; while a normal urine through contamination by bacteria may begin to show a positive albumin reaction. Chloroform or formaldehyde, the most commonly used preservatives, may lead to error if it is not remembered that they give a positive sugar reaction with the ordinary reagents. Salicylates may give a positive ferric chloride test for diacetic acid.

The secretion of water is the best first evidence of functional capacity. A kidney incapable of properly excreting water will never

*Read at a meeting of the Southside Medical Society, at Petersburg, Va., December 20, 1921.

be able to put out the normally dissolved substances properly. The protein intake (125 gm. normally in twenty-four hours) should always be borne in mind when considering the urea output. The fluid intake must be borne in mind, as well as excretion by means other than the kidney, e. g., lungs, skin and bowel. From the lungs is ordinarily lost as much or more water (2,000 c.c.), than from the kidneys: and the skin pours out from one-third to one-half as much as the kidneys (500 to 750 c.c.), and the bowel normally from 60 to 120 c.c. The remainder (1,500 to 1,800 c.c.) from all the water taken in or formed in the body, goes out through the kidneys.

An increase in quantity is an early symptom of chronic nephritis, but many extra-renal conditions have to be thought of. It is very marked in diabetes, in the resorption of edema and of transudates in certain organic cerebral diseases as well as in psychic disturbances and hysteria. Oliguria is present in acute nephritis and is suggestive of impending uremia in chronic form. It is also often marked in fever, gout, diarrhoea, and during the formation of edema or transudates. Normally, the specific gravity of the twenty-four hour specimen varies from 1,012 to 1,030. Any further variation usually indicates pathology. The yellow color varies in intensity with the volume excreted. Diseases influencing the output also influence the color. Urine containing bile is brown with a yellow foam, while blood pigment imparts a red or smoky brown color. Certain drugs impart a characteristic color, while a pale green urine with high specific gravity is suggestive of diabetes mellitus.

Urine is normally faintly acid. An increase in the acidity is seen in acidosis, febrile conditions, heavy protein diet, and in conditions which accelerate the metabolic processes of the body.

An alkaline urine may be due to a vegetable diet or to the administration of certain drugs, but is more frequently the result of decomposition. If the specimen is fresh it may mean retention or pyonephrosis.

Albumin may occur in the urine of normal people after severe exertion, mental strain, exposure to cold, or may be due to faulty posture. Its presence in disease may be due either to the products of infection or metabolic disease. The urine of true nephritis almost always contains albumin. In the chronic type the amount bears no definite relation to the severity of the disease. A diminution of albumin in patients convalescing from acute nephritis indicates an increase in the kidney function. Sugar is excreted in the urine whenever it attains a concentration in the blood of over two-tenths per cent. This may be due to excessive intake, head injuries or brain tumors, certain drug poisoning (phosphorus, carbon monoxide and arsenic), lactation or diabetes mellitus. All persistent glycosurias prove to be diabetic. When carbohydrates are not ingested, or when the body cannot utilize them, a defect appears in the metabolism of fats, resulting in the accumulation of acetone bodies. These appear in the urine as an indication of acidosis.

In the sediment we look for casts, blood and pus cells, and bacteria. Casts are present at some time in all nephropathies. Hyalin casts, most frequently seen, do not indicate any special condition. Granular casts are present in degenerative kidney lesions, while pus casts indicate pyelonephritis. Pus or blood cells indicate a lesion in the urological tract, and it is necessary by the process of elimination to determine its location. The examination of stained smears for bacteria will aid in determining the nature of an infection when present.

The greatest possible care should be taken in collecting a specimen. When examining men, the two glass test is satisfactory. In women, if there is pus or blood, a catheterized specimen should be examined.

The following case illustrates an error that might be made:

C. R., girl, aged 7 years, entered St. Elizabeth's Hospital, August 14, 1921, complaining of pain in the right side of the abdomen, and painful urination. Temperature 101. An examination of a voided specimen showed numerous pus cells. A diagnosis of acute pyelitis was made. The following day a more careful examination showed that she had a vaginal discharge containing Gram negative diplococci. A catheterized specimen of urine contained only an occasional leukocyte. At operation she was found to have an acutely inflamed appendix.

Mosenthal's two-hour renal test is the test which shows the earliest and slightest degree of kidney damage in chronic nephritis. This test will show positive results at a time when the "phthalein" or Ambard (urea nitrogen) test will be essentially negative. The complete

test consists in placing the patient on a special diet in which the intake of salt, protein and water is known. Urine is collected in separate containers, at two-hour intervals throughout the day, the night output (9 A. M. to 7 A. M.) being collected as one specimen. The specimens which altogether would make one twenty-four hour collection are examined separately as regards volume, specific gravity, salt and total nitrogen content.

In early chronic nephritis, the kidney loses the ability to concentrate excreted substances. As a consequence one of the earliest urinary findings in chronic nephritis is an increase in the fluid output with lowered specific gravity. The subjective symptoms at this time are those of nocturia and polyuria. When in the noon meal of the test diet an excess of salt is added, the normal kidney responds, as evidenced in the examination of the next one or two hour collections by secreting a urine of high salt content and high specific gravity. Long befor the next meal the urine is back at its normal concentration, and there remains no evidence of the excess burden recently put upon it. The normal kidney at night is able to concentrate the urine to such an extent that the entire output equals that of one voiding during the day.

In the two-hour test, after all of the specimens have been collected, the volume and specific gravity of each should be noted. Determination of salt content and total nitrogen require considerable apparatus. Since variations from the normal in the manner of their excretion take place only after fixation of volume and specific gravity, the determination of the specific gravity and volume is all that is necessary for diagnostic purposes. Normally, the specific gravity should be at times above 1,018, particularly after meals. With the specific gravity constantly below 1,018, there is "fixation." The night specimen should not measure over 400 c.c. volume: its specific gravity should be 1,018 or more.

The following cases illustrate in a general way the interpretation of the Mosenthal two-hour renal test:

Case No. 1. No. S-5980. Age 25. Married. Housewife. Diagnosis: Left ovarian cyst; fibroid of uterus; chronic appendicitis. Urine: Specific gravity 1,004 to 1,026. Blood pressure 115-70.

Diet for preceding twenty-four hours, modified soft. Four grams salt added at noon meal. Test started at 7 A. M.

Time	Vol. C.C.	Sp. Gr.
9 A. M.	100	1,015
11 A. M.	400	1,006
1 P. M.	500	1,004
3 P. M.	150	1,011
5 P. M.	80	1,018
7 P. M.	100	1,022
9 P. M.	80	1,022
7 A. M.	250	1,026

Summary:—Water; no fixation of amount or specific gravity. Good and prompt response to noon meal salt. Chloride; good response. output not delayed after the noon meal.

Case No. 2. Age 62. Widower. Diagnosis: Chronic nephritis, syphilis of stomach. Urine: acid. Specific gravity 1,011 to 1,025. Albumin 2-plus. No sugar. Microscopic: few hyalin and granular casts. Blood pressure. 125-70. Phenolsulphonephthalein excretion sixty per cent first hour.

Time	Vol. C.C.	Sp. Gr.
9 A. M.	80	1,017
11 A. M.	60	1,020
1 P. M.	60	1,020
3 P. M.	60	1,020
5 P. M.	70	1,025
7 P. M.	70	1,021
9 P. M.	60	1,022
7 A. M.	550	1,011

Summary:—Water: specifice gravity fixed greater part of day. Volume also fixed. Slight delayed response to noon meal. Chloride: delayed response to noon meal.

Case No. 3. No. S-7232. Aged 73. Widow. Diagnosis: Carcinoma of face, chronic interstitial nephritis, arteriosclerosis, chronic myocarditis. Urine: Acid. Specific gravity 1,004 to 1,012. Albumin 2-plus. No sugar. Microscopic: negative. Blood pressure 155-95. Phenolsulphonephthalein excretion thirty per cent. in two hours.

Diet for preceding twenty-four hours, modified soft. Other diets within preceding three days, same. Four grams salt added at noon meal.

Time	Vol. C.C.	Sp. Gr.
9 A. M.		
11 A. M.	50	1,011
1 P. M.	125	1,008
3 P. M.	100	1,005
5 P. M.	120	1,010
7 P. M.	100	1,012
9 P. M.	250	1,010
7 A. M.	1,000	1,004

Summary:—Water: specific gravity moderately fixed. Volume low during the day, high

during the night. Salt; concentration somewhat fixed. Practically no response to noon meal.

CONCLUSIONS.

1. A large number of doctors seem to be of the opinion that special apparatus and special training are necessary to ascertain renal function.

2. A urinary analysis done in a haphazard manner without regard to the patient's intake or the method by which the specimen was obtained is often useless as an aid to diagnosis.

3. A test of the kidneys' ability to take care of the waste products of metabolism as shown in the volume and specific gravity of the two-hour renal test in addition to the tests made by apparatus available in any physician's laboratory is all that is necessary for a thorough urinary study, except in cases showing pus in the catheterized urine, or when disease is believed to be confined to one kidney.

ACUTE ANTERIOR POLIOMYELITIS.*

By LITTLETON DAVIS, M. D., ROANOKE, VIRGINIA.

Before considering the diagnosis and differential diagnosis of poliomyelitis proper, I think we can more easily interpret the symptoms and course of this disease by briefly reviewing some phases of the gross pathology in a class of meningeal and brain diseases which show much overlapping of symptoms, slight overlapping of pathology, and yet all having, so far as is known, a separate and distinct etiology.

All forms of meningitis attack first the meninges outside of and including the pia mater. These being serous membranes, a large amount of fluid exudate is poured out, the brain is squeezed from without inward, and from the ventricles within outward. The most superficial layers of brain substance are, therefore, injured by pressure first, and by direct continuity of tissue inflammation later. In purulent or thick fibrinous exudates, the openings connecting the meningeal spaces with the ventricles and spinal canal are often blocked, giving rise to an uneven distribution of fluid with pressure more circumscribed over certain areas, signs of which will be mentioned later.

On the other hand, in diseases like poliomyelitis and encephalitis the lesions are internal to the pia mater, and are more widely distributed in the brain and cord. They may affect the gray matter of the cortex, the cerebellum, medulla, or pons. More often about the floor of the fourth ventricle, and in the anterior horns of the cervical and lumbar enlargements of the cord are seen the most typical lesions.

The virus primarily causes degeneration of nerve cells and produces little exudate into the serous cavities. The swelling of these tissues, therefore, gives expansion outward against the fluid cavities, the symptoms then being irritative and paralytic rather than pressure and toxic.

Meningism, a term applied to the cerebral symptoms accompanying the acute infectious diseases, and syphilis of the central nervous system according to the location of their lesions, should probably be classed in the latter group. In meningism there is supposed to be a transudate of normal fluid with some pressure and irritative symptoms.

While we cannot consider the pia mater as a sharp dividing line in the pathology of these two groups of diseases, it is a great help when studying the atypical cases, to remember that the meningeal group develop from without inward, accompanied by a squeezing pressing exudative inflammatory process, extending to and including the pia mater, when the symptoms may overlap into the polioencephalitic group; that the poliomyeloencephalitic group, locating from within outward to the pia, are mildly inflammatory in character, but are accompanied by extensive degeneration of nerve structures, with consequent paralysis of widely varying distribution and severity.

The best classification of poliomyelitis for practical purposes is that by Dr. Draper, of New York, who recognizes three groups, depending on the course of the disease:

1. The dromedary type, having two phases, with an intervening period practically free from symptoms;

2. A straggling group showing symptoms of the usual variety: and

3. A sudden onset group.

From experiments on animals, and observation of a great number of patients during epidemics, it is believed that there are two distinct phases of infection: A systemic invasion first, and then the attachment of the virus to the central nervous system. This may be closely combined or separated by an interval of several days, or either phase may be so mild as to escape attention, or so severe as to over-shadow

*Read at meeting of Southwest Virginia Medical Society, in Marion, Va., September, 1921.

the other. This seems to explain why about fifty per cent. develop no paralysis, while many others develop paralysis with few premonitory symptoms.

The symptoms, as taken from the straggling group of this disease, are perhaps the most typical and the easiest to diagnose. They are fever lasting from two to five days; rigidity of the neck, spine and extremity muscles; tremors of the hands and fingers; hyperesthesia; photophobia; stiffening of the spine on attempts to handle (the spine sign); variable knee jerks, with later weakening or entire loss, with loss of motion in one or more extremities at any time from onset of fever to five or six days, later. Also, there is drowsiness or stupor, constipation or vomiting, and there may be convulsive movements in any degree from mild tremors, or contractions of certain groups of muscles, to general convulsions. After a variable period of time, the paralysis rapidly clears up, with the exception of certain groups of muscles which may remain permanently impaired. The blood shows from 12,000 to 18,000 white cells; the spinal fluid is clear or opalescent, shows a thick foam on top when shaken, the cells are increased from 30 or 40 to 600 or 800, and sugar is normal or increased in amount. There is a skin rash, resembling measles, in ten per cent. of cases of poliomyelitis.

It is the atypical cases that make the trouble in diagnosis, and even in the sporadic cases, many are in this class. After a period of slight fever and irritability, there may develop rapid or irregular breathing, deep stupor, high fever, irregular pulse, aphasia and dysphagia, loss of knee jerks, ankle clonus, paralysis of any or all extremities, cyanosis and respiratory paralysis before the fifth day, or, if death does not occur, the patient may have little or no paralysis left after two or three months.

Differential Diagnosis.

About three-fourths of all intracranial disease in early childhood is tuberculous meningitis. Therefore, except in epidemics of poliomyelitits or of cerebrospinal meningitis, this is the first and most important condition to consider and to eliminate. Unless paralysis develops within the first five days, it is wellnigh impossible to distinguish between these two diseases. Tuberculous meningitis is usually slow in onset, slow but steadily worse in its course, with signs in the lungs in forty per cent. of cases. The age is from two to three years and down; and for poliomyelitis from two to three years and upward. History of tuberculosis is important. The von Pirquet skin test is positive in sixty-five per cent. of tuberculous meningitis. There is only one per cent. of leg paralysis in tuberculous meningitis, as against fifty per cent. in poliomyelitis.

Except in poliomyelitis cases dying, the first five days (the bulbar type) strabismus and ciliary paralysis are very rare in poliomyelitis, while in tuberculous meningitis they are present in seventy-six per cent. of cases.

I have never seen actual paralysis of extremmities in tuberculous meningitis. All have shown eye muscle paralysis.

Spinal Fluid.

The spinal fluid, with slight exceptions, offers little help for eliminating tuberculous meningitis. It is clear and shows no permanent foam. The cells are only slightly higher in tuberculous meningitis. It is only in the late stages of tuberculous meningitis that sugar is diminished or absent, while in poliomyelitis it is normal or increased, and in some cerebral cases it may be absent. The spinal fluid lends no help in separating poliomyelitis from epidemic encephalitis, this giving practically the same fluid. Pathologically these two diseases are closely associated, the cerebral or cortical form of poliomyelitis being in part an encephalitis. The symptoms, however, of epidemic encephalitis are quite different and should be readily differentiated. It is slow in onset, dimness of vision and double vision often being complained of for some days before other symptoms. Drowsiness or semi-stupor develop finally and continue with little change for weeks; insomnia and delirium are features in many cases. There is slow hesitating or scanning speech, a masklike expression is said to be characteristic. There is paralysis of certain cranial nerves, especially those of the face and eyes, ptosis being seen in most cases. Epidemic meningitis may easily be confounded with poliomyelitis in the early stages. There is more marked opisthotonos in meningitis, the gun-hammer position, more general rigidity, more conjunctivitis, and rarely any paralysis at the stage at which paralysis is seen in poliomyelitis; a sign which is usually present in all forms of meningitis and that I have never seen in poliomyelitis is known as McEwen's sign. It is an increased

or variable resonance obtained by percussion over the parietal or occipito-parietal regions in children having closed fontanels. It depends on increased fluid pressure in the meninges and ventricles similar to the Skoda resonance over fluid-compressed lung tissue. Spinal fluid findings in all the purulent meningitides will, of course, differentiate them from poliomyelitis.

Diphtheritic paralysis must always be thought of in this connection. Regurgitation of food through the nose, the history of infection and often a culture from the nose or throat will give the desired information.

Cerebrospinal syphilis in children is exceedingly rare, although I have had one case in a six-year old girl. The symptoms are practically those given for encephalitis, except they may be ushered in by severe choreiform movements and wild excitability. A Wassermann will make the diagnosis.

Treatment.

The medical treatment of poliomyelitis in the acute stage is very limited. Drugs, except those aimed at the symptoms, are of no value. Serums, human or otherwise, are of little value. Bromides in full doses may have to be used for restlessness or convulsions, and, if these do not succeed, opiates are useful. These deaden the nerves to outside impressions, and prevent further damage to nerve cells. In theory, alcohol should prove of value for the same reason. Complete rest of the patient to outside impressions at this stage I consider one of the most important parts of the treatment. Strong light, all noise and unnecessary handling should be eliminated. All paralyzed extremities should be placed in positions of complete rest, and normal positions maintained by bandaging or light plaster casts. In markedly depressed cases, light and nutritious liquid or semi-liquid food only is used. Tube feeding must be resorted to in the dysphagia cases, with cereal gruels, broths, orange juice, finely ground meats or half-cooked eggs, with buttermilk or skimmed milk, if tolerated. Proper feeding and proper purgation may easily pull a patient from the seemingly fatal line into the recovery class.

The value of spinal puncture as a therapeutic agent has not been determined. I believe in properly selected cases it is of great value. Since, however, there may not be much actual increase in the quantity of fluid, the pressure being against and not by the fluid, less should be drawn than in meningitis, and this in cases with slow, irregular respiration or normal respiration. The cerebral cases showing cyanosis and rapid shallow breathing, I think, should not be punctured at all, as a rapidly developing respiratory paralysis may be hastened by this procedure.

Park View Apartment.

ACUTE PERFORATION OF DUODENAL ULCER.*

By GEORGE H. BUNCH, M. D., Columbia, S. C.

Of abdominal emergencies, not one is more classical in beginning and in course than is the acute perforation of duodenal ulcer. The clinical picture is so striking that when once seen it is never forgotten. If one has in mind the possibility of the condition, its recognition, when the case is seen early, is usually unmistakable. There is sudden, agonizing, uncontrollable pain in the epigastrium and right hypochondrium. The pain is continuous and unabating. Morphine in maximum doses does not control it. We have seen a grain given in six hours fail to give relief. The patient does not toss about as in hepatic or renal colic, but lies prostrated on his back wherever he happens to be when the perforation occurs. He is so overwhelmed by the pain that he is unable to move. There may be nausea, but this is not striking and is seldom accompanied by vomiting. Pain is the predominant symptom. Physical examination shows the abdominal muscles on defense—contracted to protect and shield the underlying pathology—in a state of board-like rigidity. In no other lesion is the rigidity so marked and so constant. Although the muscles are unyielding to pressure, the patient cries at the suggestion of palpation. When seen early, there is no distention. Tympanites commences later, with peritonitis. The pulse is of good quality, with but little increase in rate. Although so acutely ill, the patient may have a pulse of eighty. A rapid weak pulse early after perforation is suggestive of hemorrhage. Later, it is a sign of peritonitis and sepsis. There is neither leucocytosis nor fever. The temperature may be sub-normal.

Duodenal ulcer occurs four times in men to

*Read at the meeting of the Tri-State Medical Association of the Carolinas and Virginia, in Norfolk, Va., February 22-23, 1922.

once in women. Beginning usually in young adults, when untreated, it tends towards a characteristic chronicity of indigestion and hunger pain, with more or less regular intermissions and exacerbations. A man who for years has had spells of indigestion and pain in the epigastrium, coming on two or three hours after eating and relieved by eating or by taking soda, has ulcer. A typical history is diagnostic. The test meal and the x-ray are confirmatory.

Whether it be acute or chronic, any ulcer may perforate and the perforation may be the first indication of acute ulcer. The sudden prostration of a vigorous young man, who may not have had a sick day in his life, is the story in perhaps one-third of the cases. Even the chronic cases, unlesss there be obstruction of the pylorus by cicatricial contraction, have good appetities, and show no great loss of weight.

We think every acute duodenal ulcer should be treated medically as soon as recognized. Medical treatment and dieting will undoubtedly cure many of them. In chronic ulcer, with its constant cycle of intermission and recurrence, medical treatment cannot hope to effect a cure. When medical treatment has been tried and has failed to cure, surgery is strongly indicated. Deaver says, "There can be no question that ulcer of the duodenum is a graver disease than is gastric ulcer; its greater liability to fatal hemorrhage and to perforation make a sudden death probable in about one-half of the cases, unless some treatment can be applied which will not only relieve the symptoms, but entirely cure the disease." If patients were told the danger of delay, there would be fewer chronic ulcers, for they would be operated upon and cured early.

The treatment of perforated duodenal ulcer is immediate operation, the sooner the better The contents of the upper alimentary tract are relatively sterile, but peritoneal contamination begins with the perforation and continues until it is closed. Every hour counts. Under a general anaesthetic, the perforation is found and infolded. If there is pyloric obstruction from the ulcer or from the infolding of the ulcer, posterior gastro-enterostomy is done. Some operators do gastro-enterostomy after every perforation, even though there be no obstruction, if the condition of the patient permits. Most surgeons do not drain the abdomen after a duodenal perforation.

Our records show that we have operated on seven cases of acute perforation in duodenal ulcer, with one death. Although nearly one-half of our work is done upon negroes, these perforations were all in active working white men. Their ages were eighteen, twenty, twenty-four, twenty-five, thirty-one, thirty-seven and forty-seven years. The youngest three had acute ulcer. They had never previously had pain or digestive disturbances. The twenty-five year old man had indigestion and heart burn for the first time about two weeks before perforation. The oldest three patients gave an ulcer history varying from two to twenty years. Our first case was an acute ulcer of the anterior wall, which we infolded without cauterization or anastomosis. He was operated on in 1916, twelve hours after perforation, and was well when last heard from in 1918.

In 1920, we operated on two cases of perforation in acute ulcer, twelve and fourteen hours after perforation. After pushing a redhot cautery point through the perforations, the ulcers were infolded. Gastro-enterostomy was not done. They are both well and free from symptoms today. In 1920, eighteen hours after perforation, we operated upon a very toxic case, with diffuse peritonitis, with the abdomen greatly distended, blood pressure 115-75, lencocytes 9,000, temperature 100, pulse 108, respiration 64. We feared to give a general anaesthetic and under one-half per cent. novocain infiltration, the incision was made and the distended small gut was with difficulty packed away from the operative field. Two non-indurated ulcers, both perforated, were found one-half inch apart on the anterior duodenal wall, just beyond the pylorus. Without cauterization, both ulcers were infolded and reinforced with omentum. One cigarette drain was placed near the operative field and another in the pelvis. The patient was very weak. The distention gradually disappeared, but the wound became infected, and there was always some fever. The bowels moved regularly. He took nourishment as it was given him. We considered him convalescent. On the fifteenth day he had a sudden, severe paroxysm of epigastric pain, a chill, broke into a cold sweat, and soon died. Autopsy showed the perforations closed at the operation holding perfectly. Another ulcer, about one and one-half inch distal to the first two,

had perforated. We believe it had formed and perforated since the operation.

On March 31, 1920, we operated upon an emaciated man of thirty-seven, with a blood pressure of 98-68 and a hemoglobin of 50 per cent. He had a history of chronic indigestion and pain since boyhood. On March 22nd, he had severe pain in his abdomen, a chill, nausea and cold sweating. His next stool contained much dark, tarry blood. The epigastric pain continued for three days. He was exceedingly weak. Every consequent stool contained blood. He was admitted to the hospital on March 29th, with a hemoglobin of twenty per cent., and a citrate transfusion of 800 c.c. was given next day. At operation, in trying to get an exposure, the duodenum was torn through a recently perforated, walled off annular ulcer and almost separated from its attachment to the stomach. The perforation must have occurred on March 22nd, with profuse bleeding into the intestine, an unusual complication in our experience. The ulcer was excised and pylorectomy done, communication being re-established by posterior gastro-enterostomy. He had a smooth convalescence and is now in good health.

In December, 1921, we operated upon a man of thirty-one, and in January, 1922, upon a man of forty-seven, who had long ulcer histories. They were both operated upon within two hours of perforation, though neither was in the hospital at the time of perforation. They both had large, indurated ulcers extending well beyond the pylorus and into the stomach, causing obstruction of the pylorus, one having vomited all food for two weeks before the perforation. In both cases the ulcers were cauterized and infolded and gastro-enterostomy done. They are both apparently well.

Where perforation is suspected, we think it well to give, as suggested by Richter in 1919, two grains of methylene blue dissolved in one ounce of sterile water about half an hour before operation. This should be given through a tube to prevent discoloration of the lips and tongue. The solution goes into the stomach and escapes through the perforation, staining the ulcer and the adjoining tissues a deep blue. This enables the operator to find the perforation at a glance upon opening the peritoneum. We have used this in our last four cases and find it very helpful. The need for such an aid was forcibly brought to our attention in 1918 when we watched the chief surgeon at Camp Jackson search for an hour, making two incisions, for a pin point perforation in the stomach.

Cauterization of a perforated ulcer takes only a minute and, unless the condition of the patient is extreme, should be done. After the sutures are placed, they may be pulled aside and the cautery applied before the infolding is done. Before cauterization, we have not reflected the peritoneum from about the perforation, as does Balfour, but push the rounded point of a red hot soldering iron through the opening, being careful not to injure the gut wall opposite the perforation with the cautery.

The infolding of non-indurated ulcers is usually easy, but the closure of an indurated ulcer may be very difficult. We infold the gut along the longitudinal axis. Beginning about one and one-half inches beyond the ulcer, the interrupted mattress sutures of fine pachenstecher are all put in before being tied. The end sutures are carefully tightened and tied first, the ends being left long for traction. The sutures over the ulcer are tied last and the friable tissue through which they are placed is in this way relieved of all possible tension. When this row of sutures is completed, it is covered by a second row and the whole ulcer area reinforced by gastro-hepatic or gastro-colic omentum sutured over it. This takes time, but it is necessary to insure a safe closure.

Before closing the wound, we sponge out the ropy fluid which in a few hours covers the viscera and gravitates into the pelvis. Although this fluid is not very infectious, we have always left a cigarette drain to the bottom of the pelvis through a supra-pubic stab. Such a drain is probably in most cases unnecessary, but it can do no harm and we believe that, if peritonitis should develop, it might be life saving. After operation, the patient is put in Fowler's position, with a sodium bicarbonate rectal drip, on two hours and off two hours. A teaspoonful of cracked ice or water is given every fifteen minutes by mouth, if desired. After the second day, a stick of lemon candy is given every three hours to be held in the mouth until dissolved. We find this will be tolerated by the patient. It is palatable, and relieves hunger, furnishing carbohydrate and preventing acidosis. Milk, broth, gruel, and raw eggs, when liked by the patient, are given in small quantities on the four or fifth day. Food should be given often, but not much at a time, to enable the

stomach to empty between feedings, and prevent distention. None of our cases has had post-operative vomiting or bleeding.

After operation, relief from the insufferable pain is immediate and lasting. The patient gratefully speaks of how much better he feels than before the operation. Convalescence in most of these cases is almost unbelievably smooth. Although the patient is dismissed at the end of the third week with the usual careful instructions about diet, he feels so well that it is a safe bet that in a short while he is eating everything he wishes.

SOME OBSERVATIONS ON SURGERY OF THE CHEST DURING TWENTY-SIX MONTHS IN THE MILITARY SERVICE.*

By J. COLEMAN MOTLEY, M. D., F. A. C. S., Abingdon, Virginia

With the possible exception of the mechanical cleansing, or the so-called "debridement," of traumatic wounds developed by the French, and the chemical wound sterilization as worked out by Carrel and Dakin, there was no field of War Surgery in which more brilliant advances were made than in that of the chest. The work of such men as Colonel Duval of France and Colonel Bastianelli of Italy in the treatment of wounds of the lungs was epoch-making.

As much fascination as this phase of the subject holds for us, it is of relatively small practical value to us in civil practice because of the rare occurrence of lung injuries in this section of the country. Empyema, however, we have with us always, and I propose to limit my paper to a brief review of our experience with this condition in the Army.

To those of you who happen to have worked on the Surgical Service of one of the large Army Base Hospitals, much of what I have to say will sound quite trite, for I know that you were fed up on it during your military service. But in the various hospitals there were many differences in the details of managing this serious problem.

My conception of a medical society such as ours is a gathering where surgeons and clinicians may come together with their various viewpoints, and by an exchange of ideas arrive at certain conclusions that may lead toward the standardization of the treatment of the malady under discussion. It is with this conception in mind that I have selected the subject which I present to you today.

In the first epidemic of empyema in the Army Camps during 1917, the surgeons, guided only by their experience in civil practice, began to treat these cases by early rib resection and free tube drainage. The death toll was appalling. In some of the camps the mortality was as high as seventy per cent. It was soon discovered that the character of the infection was entirely different from that which we had encountered before in civil life. The usual infecting organism which attacked the soldier was the deadly streptococcus hemolyticus. When early thoracotomy was performed on such cases, there was no barrier of the thickened and adherent pleura to protect the heart and the opposite lung from the atmospheric pressure. When the infected pleura was opened, there was an immediate pneumothorax with collapse of the lung on the affected side. This pressure extended to the heart, and through the mediastinum to the opposite lung. The extra load thrown on these already overworked and embarrassed organs was the factor which produced the high operative mortality, or, at least, contributed to it. The other factors contributing to high mortality in such cases may not be so easily explained, but nevertheless we have reason to believe that with time a certain immunity is developed in streptococcal infection without which the mortality is high.

The Surgeon General appointed a board of officers, headed by Major Dunham, to make a thorough study of this problem. Aided and stimulated by the work of this board, the Surgical Services of the various hospitals developed a plan of treatment which greatly reduced the mortality during the season of 1918. Most of the fatal cases were complications of influenza and measles. The mortality of empyema following measles was particularly high.

The privilege which we had in the Army of following every fatal case to the autopsy table was of considerable value in studying the immediate causes of death. The most frequent complications revealed by the post mortem were as follows: 1. Purulent pericarditis; 2. Soft, flabby heart muscle, indicating septic myocarditis; 3. Various stages of unresolved pneumonia; 4. Lung abscess; 5. Involvement of the opposite pleura. Pericarditis when present was usually associated with left-sided

*Read before the Southwestern Virginia Medical Society at Pulaski, Va.

empyema, and seemed to be a direct invasion of the pericardium from the adjacent pleura. The opposite pleura often showed a plastic exudate, similar to that often seen in the peritoneal cavity, with little or no pus.

Special records were kept on the Empyema Wards of our Service, giving the following information in graphic form:

Temperature, pulse and respiration;
Fluid intake and output, daily;
Calories of nourishment taken, daily;
Blood pressure, daily;
X-ray findings, tri-weekly;

White and differential blood counts, every other day;

Urinalysis, including tests for acidosis;
Bacterial counts, every second day.

In making ward rounds and studying the temperature charts, we found the pulse rate to be the most reliable indication of the patient's condition. With a regular pulse of good volume and below 100, two or three degrees of temperature were of little significance; but a temperature of 99 with a pulse of 110 or more usually indicated that the patient was doing badly.

In addition to recording the fluid intake and output on the special empyema chart, a slip of paper was pasted to each bedside table on which this information was noted. This was found to be a good method of keeping check on this factor in the management, seeing that the patient was getting a liberal amount of fluid, and that his elimination was satisfactory.

The question of nourishment was found to be of great importance. A trained dietitian was kept on duty in the empyema wards, whose duty it was to make every effort to get each patient to take at least 3,000 calories daily. This was accurately measured and recorded. A liberal portion of the diet was composed of carbohydrates, for obvious reasons. Whiskey was used freely in the form of egg-nog, for its value as a readily available form of carbohydrate in these exhausting infections.

The blood pressure records were found to be of little value except in regard to prognosis. The patient's chances for recovery seemed to vary inversely with the pulse pressure. In other words, if the curves on the chart representing respectively the systolic and the diastolic pressures continued to diverge, we had a feeling that our patient was slipping.

The opportunity of checking up the physical condition of the chest every two or three days with radiographs we found to be of inestimable help. One practical point we soon learned was that black and gray rubber tubes would not show on the x-ray plate, whereas red rubber tubes would. So we used only red rubber tubing. As soon as the tube was placed in the pleural cavity the case was radiographed to see that the tube was in the position to drain the bottom of the cavity. The x-ray showed us also whether our suction apparatus was removing pus; whether other walled-off pockets were forming; whether there were abscesses in the lung; and whether pus was accumulating after the tube was removed. Several tubes lost in the pleural cavity were fished out by means of forceps aided by the fluoroscope. The amount of expansion of the lung could be followed from radiograph to radiograph.

There was nothing new or startling in our experience with the routine blood count. An increase in the white count and an upcurve of the polynuclear leucocytes simply indicated that the case was not draining properly, or that there was an encysted abscess forming, or that there was a concurrent infection.

It was our observation that acidosis was not an important factor in empyema mortality. This may have been due to the forced carbohydrate feeding resorted to on our Service.

The bacterial counts were made in connection with the Carrel-Dakin treatment, in order to determine when the pleura was sufficiently sterile to permit removal of drainage tubes and closing the cavity. My personal experience with the use of the Dakin's solution in the pleural cavity was rather disappointing. The usual method was to allow about 50 c.c. of the fluid to flow into the cavity every two hours; close the pinch-cock on the suction tube, and allow the solution to remain from twenty to thirty minutes; then open the pinch-cock and allow suction to draw it out. This worked beautifully for about a week, and then the pus would become so thick and ropy that it was difficult to get it out through the tube. Another difficulty which we encountered was in getting the pleura to remain clean after we had apparently completely sterilized it with Dakin's solution. There was almost invariably a reaccumulation of pus in three or four days

after removal of the tube. But after measures were devised to overcome these difficulties, the final result was excellent. There was very little pleural thickening, the lung expansion was prompt and complete, and soldiers were often discharged to duty with a practically normal chest.

Surgical Treatment.

After the sad experiences of the early months of the war, the following method of surgical treatment was evolved and instituted in our Service:

The chest of every pneumonia patient was carefully checked up daily. As soon as there was a suspicion of fluid in the pleural cavity an exploratory puncture was made with a hypodermic needle. If fluid was obtained it was sent to the laboratory to determine, first, whether it contained pus, and, second, if pus were present, a culture was made to determine the nature of the infecting organism. If the laboratory reported the fluid sterile, the patient remained on the Medical Service, with repeated laboratory examinations, as long as the sterility continued. If the fluid contained pus, the patient was transferred to the Surgical Service and placed in one of the empyema wards. His further surgical treatment depended upon the laboratory culture. If this showed streptococcic infection, the patient was aspirated and the aspiration repeated as often as the fluid reaccumulated. His condition was carefully watched, until some morning when he had had a better night's sleep than usual, his pulse was of a little better quality, and he seemed to have a slightly better toehold on life; then he was taken to the operating room and, under local anesthesia, a large soft rubber catheter was slipped in between the ribs and into the affected pleural cavity. The tube was inserted either through a trocar or through a small scalpel puncture, the finger plugging the opening until the tube was introduced, and every effort made to prevent air from entering the pleural cavity. By a column of water in a rubber tube four or five feet long a siphon drainage was started, and the pus was sucked out into a bottle. As soon as the patient was returned to the ward, he was hooked up to a regular suction apparatus, and a reservoir of Dakin's solution connected to the drainage tube by a Y-glass connection.

It is interesting to note that at least six cases under my personal observation recovered after repeated pleural aspirations alone, and never came to thoracotomy.

If, on the other hand, the culture showed a straight pneumococcic infection, a very different problem was presented. In such cases the preliminary aspirations and the extreme conservatism in delaying operation employed in the streptococcus hemolyticus types were found to be unnecessary. Early thoracotomy with free drainage was instituted in such cases.

Suction drainage, however, was resorted to in all cases, as it was more comfortable for the patient, and the end-results were better. The Carrel-Dakin solution was also a routine measure. An air-tight joint at the chest wall was obtained by taking a disc of automobile inner tubing and punching a hole in its center with a leather punch. The drainage tube was drawn through the hole and the rubber disc strapped snugly to the chest with broad strips of adhesive plaster placed criss-cross. Suction was obtained by taking five-gallon bottles and exhausting the air from them with a foot-pump. The amount of negative pressure was controlled by a mercury manometer on each bottle. A pull of from 35 to 40 mm. of mercury was usually required.

Conclusions.

From such observations obtained from a large series of cases, we may draw certain conclusions of value to us in civil practice:

1. An early diagnosis of empyema is of greatest importance, if we wish to cure the patient with the minimal amount of pleural thickening, adhesions and crippling of the lung. When in doubt about the presence of fluid, a diagnostic puncture with a sterile hypodermic needle is a safe and reliable means of clearing up the uncertainity.

2. When fluid is found in the pleural cavity, its gross appearance usually gives a reliable clue to the identity of the causative organism. The streptococcus fluid is usually quite thin and nearly colorless, like thin bouillon, while the pneumococcus exudate is generally frankly purulent and thick when first found: a very important differentiation, because the two types of infection are handled so differently. When by such observation, or, more accurately, by bacteriological culture, the streptococcus is discovered to be the infective organism, the case must be handled with the utmost surgical conservatism, for early thoracotomy is usually fatal. On the other hand,

when the ordinary pneumococcus is present, any good plan of pleural drainage will generally relieve the patient of his immediate illness, but some form of suction drainage is most comfortable for the patient and secures better end-results.

3. The Carrel-Dakin treatment, while it has its limitations, is under proper control and intelligent supervision, an agent of undoubted value.

4. The roentgenologist is the right bower of the surgeon in the treatment of empyema.

The George Ben Johnston Memorial Hospital.

THE SURGICAL TREATMENT OF TRIGEMINAL NEURALGIA.*

By ADDISON G. BRENIZER, M. D., Charlotte, N. C.

This paper, as suggested by its title, embraces the surgical treatment of only minor and major trigeminal neuralgias. It has nothing to do with the discussion of either the cause or effect of any of the neuralgias, particularly, has it nothing to do with the several types of facial neuralgias, capable of being mistaken for trigeminal neuralgias: (1) those ascribed to the spheno-palatine ganglion or Sluder's neuralgia; (2) those secondary to zoster; (3) those attributed to the geniculate ganglion, or Hunt's neuralgia; (4) those accompanying convulsive tic, and (5, those due to involvement of the trigeminus by tumors. These five types of facial neuralgia are mentioned for the one reason that they may be distinguished from the trigeminal neuralgias under appropriate treatment and this distinction should be made, if possible, before a major operation is planned. Cases also of so-called "central pain," projected over trigeminal areas, may be separated through appropriate treatment from trigeminal neuralgias but not from other types of facial neuralgias.

The deep peripheral operations of resection of the maxillary and mandibular branches of the trigeminus have certainly been superseded by the deep extra-cranial injections of alcohol into these nerves near the foramina of the exit from the skull. I am not so sure about the superficial peripheral operations of nerve avulsion, at the supra-orbital foramen and section of the lingual nerve within the mouth, when the neuralgia has been for a long time confined to one of the superficial branches. There is, it must be admitted, a frequent tendency to return and spread to other branches. Alcoholic injections cannot be used for the first or ophthalmic division, so that the peripheral avulsion of its terminals, the supra-orbital and supra-trochlear branches, alone or along with alcoholic injections of the maxillary and mandibular branches, must be given consideration.

In neuralgia limited to one of the two lower divisions and which may not possibly extend into other trigeminal areas, alcoholic injections represent, unquestionably the treatment of choice. When the neuralgia has spread beyond its original area and come to involve that supplied by the adjacent division, a trigeminal neurectomy must be contemplated, but, if no deep preceding injection of alcohol has been made, it may be useful not only in determining the type of neuralgia, but in giving the patient some warning as to what the numbness resulting from the neurectomy may amount to.

Alcoholic injections are sometimes useful in determining in doubtful cases whether the syndrome is a true neuralgia of the tic douloureux type or one of the peculiar and rare pseudo-neuralgias not amenable to relief either by injections or neurectomies. The extra-cranial injections of alcohol are not entirely free from risks. There have been reported paralysis of the oculo-motor and abducens nerve, locking of the jaw from infiltration, and fibrosis of the pterygoid muscles, permanent paralysis of the motor fifth after injection of the mandibular division (this may occur likewise after removal of the ganglion or even section or avulsion of the posterior root, but should be preserved after section of posterior root), facial paralysis and labyrinthine trouble due to injections into the middle ear: the Eustachian tube is but a few m.m. from the mandibular branch at the foramen ovale.

In no case should the injection be purposefully pushed to the point of injection into the gasserian sheath itself, although the Harris, Haertal and van Allen techniques are described and advocated by numerous authors.

Over against the hazards of alcoholic injections are cited the perfect and permanent results of trigeminal sensory root section or avulsion as reported by Cushing and Frazier. Cushing reports 312 consecutive cases without a fatality and declares that the operation is practically free from risks and with a mor-

*Read before the Tri-State Medical Association of the Carolinas and Virginia, Norfolk, Va., February 22, 1922.

tality lower than that of almost any other so-called major operation in surgery. Frazier reports 177 cases with but one fatality, and but two recurrences in a series of 321 operations, and in both cases at secondary operations it was found that the posterior root had not been completely divided.

Simple section of the posterior root is as effective as resection or avulsion since these fibers cannot regenerate in the direction of the gasserian ganglion. Section can be done usually without injury to the motor root, thus avoiding a paralysis of the muscles of mastication on that side. Anesthesia of the cornea and keratitis neuro-paralytica cannot always be avoided if a complete section of the posterior root be made. No harm, however, usually follows the anesthesia of the cornea if the eye is shielded and taken care of for the the first few weeks. It is likely that fibers from the carotid plexus, conveyed through the gasserian ganglion and along the ophthalmic division have to do with trophic changes in the cornea and that these fibers can be avoided by directing gentle attention to the posterior root alone. Likewise, interference with the frontal branch of the facial nerve aggravates the keratitis through a lagophthalmos. The frontal branch may be paralyzed not only by a mislayed skin flap but also by injury in the pons by avulsion of the sensory root. It would seem that the operation of section of the posterior sensory root of the fifth nerve had reached a stage of perfection that left nothing to be desired, so that the prolonged and repeated use of injections in refractory cases should be deplored and discountenanced.

In the light of our instruction of today and in view of the above remarks, it would seem that the justified surgical precedures for the treatment of trigeninal neuralgias are confined to the following operations to be described directly:

1. Superficial alcoholic injections at the foramina exit.

2. Deep extra-cranial injections of alcohol into the mandibular and maxillary branches at the foramina ovale and rotundum.

3. (a) Avulsion of the supra-obital and supra-trochlear nerves.

(b) Avulsion of the lingual nerve within the mouth.

4. Section of the posterior sensory root, sparing the motor root.

DUODENAL ULCER AND CHOLECYSTITIS.*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

The differentiation between chronic cholecystitis and duodenal ulcer is still sufficiently difficult to justify further discussion, particularly in an attempt to better explain the frequent close clinical similarity between the two diseases.

Classical duodenal ulcer is characterized by pain or distress, coming on quite regularly from one to three or more hours after meals, and relieved by the taking of food or alkali. In cases complicated by pyloric obstruction, the pain may persist well into the night. This symptom-complex is rarely found in pure cholecystitis, where the distress often occurs earlier after meals, but with considerably less regularity, and is less constantly relieved by food.

In both diseases, the symptoms may be intermittent. In both, nausea may or may not be present. Vomiting may or may not be present. Constipation is characteristic of both conditions. In either there may be no complaint of gas, or in either it may be a troublesome or even the chief symptom. It may only accompany the pain and distress, or it may occur independently, particularly in gall-bladder disease. Again, the patient may complain of practically continuous abdominal distention and flatulence in either condition. The gas may be present in the stomach and accompanied by belching, or it may occur chiefly in the colon and be passed by rectum.

Short cuts to the diagnosis of cholecystitis by physical examination have in the main been of no great assistance. The presence or absence of tender pressure points has been discussed repeatedly. Certain French authors[1] have described an absence or diminution of the normal vesicular respiratory murmur in the right lower axilla in case of cholecystitis. We have found normal breath sound, on the contrary, to remain present in this area in some cases of both acute and chronic cholecystitis, with diagnosis corroborated at operation.

The presence of a jerking pain on deep inspiration, when the examiner's hand is hooked under the rib margin, has recently been described[2] as characteristic of gall-bladder involvement. It has been my experience, and

*From the Medical Service of St. Elizabeth's Hospital.
*Read before the Tri-State Medical Society, Norfolk, Va., February 22, 1922.

without doubt the experience of many, that when a liver is barely palpable on deep inspiration, the thrust of that organ against the palpating fingers will elicit the same jerky painful response. This occurs in many cases in which the gall-bladder is not under suspicion.

Spasticity of the abdominal muscles in the right upper quadrant is certainly more frequently found in cholecystitis than in ulcer; so, likewise, is cutaneous hyperaesthesia to painful stimulation, as by pin-scratching or pinching. These two phenomena, when present, are of undoubted diagnostic value.

There can be no doubt that in the vast majority of cases the anamnesis is of greater importance than the physical findings in the differentiation of these conditions.

The findings on gastric analysis are variable in both ulcer and cholecystitis. In either there may be present a subacidity, normal findings, or a hyperacidity. Several of the older text books have described hyperchlorhydria as characteristic of cholecystitis. Although there is considerable variation, our experience has been that a subacidity is more frequently found. Several of the more recent writings agree on this point. The findings on gastric analysis are of sufficient confirmatory value to warrant the application of this method of examination in the differential diagnosis. In cholecystitis, subacidity or anacidity is the more frequent finding, while in duodenal ulcer the findings are more often either normal or of an increased acidity.

Fortunately, the roentgen ray gives valuable information in these conditions. The absence of a filling defect in the duodenal shadow usually eliminates the possibility of duodenal ulcer. Even here, however, the facilities for differentiation are not absolute, as in two cases operated on at St. Elizabeth's during the last year. In both there was no defect, but in the first there was a superficial bleeding erosion, and in the second an old ulcer with considerable evident repair. In both cases, the operation has resulted in complete recovery from symptoms.

The presence of a constant filling defect may mean ulcer. It may mean pressure from some tumor or some other organ, such as the gall-bladder. It may be due to adhesions between the gall-bladder and the duodenum, or adhesions between the duodenum and some other organ.

It is true that as a rule a competent roentgenologist can differentiate between filling defects due to duodenal ulcer and those due to adhesions to the duodenum, particularly from an inflamed gall-bladder. This cannot always be done, and unfortunately, some of the indirect roentgen signs of ulcer, such as hyperperistalsis, hypermotility, and where there is some pyloric obstruction, delayed empyting, are found in some cases of cholecystitis with adhesions.

The recognition of cholecystitis by roentgen examination is usually accomplished only from indirect evidence. The presence of a gall-bladder shadow does not always indicate that the organ is diseased. Spasticity of the pyloric end of the stomach, with a resultant "tapering pylorus," or "spigot-shaped pylorus" is, when present, suggestive of gall-bladder involvement. Variations in the motility or in the emptying time of the stomach are of some assistance in establishing a diagnosis when disease in the duodenum and elsewhere has been carefully eliminated.

The results of transduodenal lavage, as described by Lyon, may be of some value in differentiating between ulcer and cholecystitis, but at the present time this work is still in an experimental phase, and in all probability, both the theoretical considerations and the interpretation of results will be more or less modified before the method becomes generally accepted.

In the present discussion we are interested particularly in attempting to explain, if possible, the inter-relationship between the symptoms of ulcer and of cholecystitis. In the series of cases which we have studied we have found it relatively easy to differentiate pure, uncomplicated cholecystitis from simple duodenal ulcer. The difficulty in differentiation arises when both the duodenum and gall-bladder become simultaneously involved.

The various combinations found at operation besides the two pure lesions are: (1), involvement of the mucous membrane of both organs; (2), involvement of the serous layers of both organs, usually with adhesions between the two and with little or no recognizable disease in the mucous membranes; (3), inflammation of both the external and internal coats of either organ alone; (4), ulcer or cholecystitis with evidences of serous inflammation of the other organ, as indicated by the presence of adhesions.

Late pain and gnawing or distress, relieved

by food or soda, is found characteristically in pure duodenal ulcer. In our experience it is also present in ulcer complicated by periduodenal adhesions and by adhesions between the duodenum and the gall-bladder. It may indeed be present in duodenal ulcer accompanied by an actual cholecystitis. We have rarely found it to be present in uncomplicated cholecystitis, but it does occasionally occur in cases of the latter disease when complicated by adhesions to the duodenal serosa. In other words, the typical duodenal ulcer symptoms usually occur in ulcer, or ulcer with adhesions, or in cholecystitis with adhesions to the duodenum.

However, in cholecystitis with duodenal adhesions, there is usually some additional feature in the history not characteristic of ulcer, and serving to cast suspicion on the gall-bladder. Among the chief of these additional symptoms I have found to be the radiation of pain toward the right scapula, paroxysmal type of pain, a history of jaundice, and for some reason, a history of inability to eat a few certain articles of food. This last symptom is exceptional even in our gall-bladder histories, but when present it usually points to involvement of that organ.

In the roentgen examination we are particularly interested in the type of filling defect associated with adhesions to the gall-bladder, with or without ulceration of the duodenal mucosa. It is at times absolutely impossible to differentiate by the roentgen ray alone, pure duodenal ulcer from cholecystitis, without ulcer, but with adhesions to the duodenum. It was formerly taught that tenderness on pressure directly over the filling defect indicated ulcer. We have found it in cholecystitis with duodenal adhesions, without ulcer.

Motility of the duodenal cap on pressure occasionally assists in the roentgen differentiation. This again is only successful in the hands of the expert, and even then, does not always enable a satisfactory differentiation.

Various observers have suggested that the similarity in the symptomatology of duodenal ulcer and cholecystitis is due primarily to the closely related embryologic development between the two organs. It will be remembered that the biliary tract develops as an evagination from the duodenum, and that the nerve supplies of the two organs are thereby very intimately related. While this is a fact, I do not think that it satisfactorily explains the findings. As a matter of fact, it is usually when there is involvement of both organs, either externally or internally, that the picture becomes distinctly obscured, and I am led to conclude from our findings that the presence of adhesions is of considerable significance in relation to the symptomatology. As a rule, the importance of adhesions has been lightly passed over, or even denied by many internists and surgeons. In certain parts of the abdomen it is true that adhesions may give rise to few or no symptoms. Particularly is this true where considerable freedom of movement is allowed by long mesenteric attachments. But in the region of the pylorus and duodenum, where the organs are normally quite firmly fixed additional impairment of motility produces very definite symptoms.

We have been particularly fortunate in having opportunity to study a few cases in whom duodenal ulcer was found to be present at the first operation, together with adhesions to the gall-bladder, but in whom the gall-bladder otherwise appeared to be normal. The ulcer was removed, and a pyloroplasty was performed, while the adhesions to the gall-bladder were broken up. In one or two cases symptoms recurred, and at a secondary operation the duodenal mucosa was found to be normal, while the symptoms appeared to be due entirely to dense adhesions between the outer coat of the duodenum and the gall-bladder. We have thus been able to study the relationship between symptoms due to ulcer, and those due to periduodenal and pericholecystic adhesions.

Patient J. B. was first admitted to St. Elizabeth's October 3, 1918. The gastrointestinal history extended over a period of eight years. He complained chiefly of pain in the epigastrium coming on from one to three hours after meals, which was relieved by food or soda. He did not vomit. The attacks would last as a rule for about four weeks, with intervening periods of freedom from compaint, of four or five months. He had had an appendectomy in 1916. The appendix was found to be not diseased.

At operation there were found a duodenal ulcer, pericholecystic adhesions, Lane band, pericecal adhesions, and diverticulum at the old site of the appendix. Operation consisted in excision of ulcer, Horsley pyloroplasty, separation of adhesions, and infolding of the diverticulum.

Eleven months later the patient returned. He had done very well for nine months, during which he gained twenty pounds in weight. During the succeeding two months, however, indigestion returned, accompanied by gas and discomfort usually coming three hours after meals and with epigastric pain. He also complained of pain in the right half of the abdomen, coming on with great severity at night, and requiring morphine for relief. Again, there was slight nausea, but no vomiting.

At the second operation there were dense adhesions around the gall-bladder, and between the gall-bladder and duodenum. These were separated, and the pylorus and duodenum were thoroughly inspected and found to be in excellent condition. Cholecystectomy was performed, and a chronic catarrhal cholecystitis was found to be present.

This case exemplifies the fact that cholecystitis with adhesions to the duodenum may be responsible for persistence of typical ulcer pains after removal of the ulcer.

Patient L. W. P., admitted in April, 1920, gave a history of six months' duration, with paroxysmal attacks of pain just below the xiphoid, coming about once a week without definite relationship to meals, made worse by food or soda, or by jolting as in automobile riding. Pain was the dominant symptom. There was some nausea and vomiting. At operation a duodenal ulcer was found, which evidently had perforated slowly and was occluded by adhesions between the gall-bladder and duodenum. The ulcer was excised, Horsley pyloroplasty was performed, and the adhesions were separated. With the exception of the adhesions, the gall-bladder appeared normal.

Three months later the identical symptoms returned, but with slightly lessened severity. At operation in November, 1920, the pylorus was found in excellent condition, and the duodenum appeared normal. There were dense adhesions about the gall-bladder and between the gall-bladder and the stomach and duodenum. The gall-bladder was removed. On examination after removal, this organ showed little evidence of disease. The contents appeared normal, and the walls were thick and slightly congested.

After an interval of six months the symptoms again returned, and were again of the same character except that they were somewhat less frequent and, if anything, more severe. A third operation was performed in August, 1921. Peripyloric and periduodenal adhesions were again found. There was no recurrence of ulcer. Posterior gastro-enterostomy was performed, and the pylorus was occluded.

It is but five months since the last operation, but the patient has remained entirely symptom-free. Appetite is excellent. He has gained ten pounds in weight.

In this second case the symptoms throughout appear to have been mainly due to adhesions and they persisted, together with the adhesions, until, by gastro-enterostomy, the pylorus and duodenum were relatively immobilized.

Rarely, bands formed in the region of the gall-bladder and duodenum during embryonic development may cause symptoms and produce physical changes which cannot be clinically differentiated from ulcer or cholecystitis. When involving the gall-bladder in adhesions, such a condition is sometimes termed "pseudo cholecystitis". These bands are analogous to the familiar Lane band found in the lower abdomen, and were first fully described by Morris, who coined a happy phrase in designating them "cobwebs in the attic of the abdomen".

Occasionally such extrinsic adhesive bands may form as a result of inflammation, without involvement of the mucous membrane of either the duodenum or the gall-bladder. Such rare pathologic conditions are from their very nature practically never correctly diagnosed, except at operation.

For the purpose of facilitating this analysis, I have chosen cases with little or no additional pathology. In clinical work, however, the picture is further obscured by disease elsewhere, particularly in the appendix. The following case exemplifies the confusion that may thus arise:

Patient J. H. S., age 37, entered St. Elizabeth's December 7, 1921, complaining of eructations of gas one hour after meals, and often before breakfast, and accompanied by a burning pain and sensation of pressure in the right hypochondrium. He had had typhoid at 18 and the symptoms dated from around that time. During the last eight months the symptoms had become distinctly more severe, with definite pain in the right hypochondrium and back, coming on one hour after meals and relieved by soda or gastric lavage, and

rather less constantly by food. The patient believed he had been jaundiced twice within the last eight years, and he described clay-colored stools. Physical examination showed nothing with respect to the enterologic condition other than some slight increased muscle tonus in the right upper quadrant. There was no tenderness and no cutaneous hyperaesthesia. A diagnosis of cholecystitis with adhesions to the duodenum was made. Subsequent x-ray examination showed a pointed or tapering pylorus, and a filling defect or sacculation in the second portion of the duodenum.

At operation, the stomach, duodenum and gall-bladder were found to be normal. There were many adhesions from the omentum and mesocolon to the liver. The omental fat in this region was decidedly infiltrated, and brownish pigmentation at one point suggested the presence of a small abscess which had gradually been absorbed. The appendix was chronically inflamed, pointed upward and outward, and was densely adherent. The inflammatory mass in the upper abdomen may have been caused by the appendiceal inflammation.

Just a word regarding one important practical application of our studies. I have followed up all cases of duodenal ulcer operated on at St. Elizabeth's in which pyloroplasty has been performed. In other words, I have studied those cases in which cure of the ulcer was accomplished with a minimum of structural and functional alteration. All of those cases in which simple duodenal ulcer was found have remained entirely symptom-free.

In four cases, although there were adhesions to the gall-bladder, that organ appeared otherwise so healthy that the adhesions were merely separated and the gall-bladder was neither drained nor removed. Three are unimproved, while the fourth, although distinctly improved, is not well.

On the contrary, all cases of ulcer with gall-bladder adhesions or cholecystitis, in which the bladder was also operated on, have remained well. In one the gall-bladder was drained. In the remainder it was removed.

Here again I have used only those cases not obscured by extensive additional pathology or by extensive adhesions elsewhere in the upper abdomen.

The importance of cholecysto-duodenal adhesions is again emphasized by this series. If they do not cause symptoms *per se*, they predispose to gall-bladder infection by producing stasis in that organ or even by affording in the presence of an ulcer a direct path of infection through from the duodenum.

It has not been my intention in the foregoing discussion to intimate that we have evolved a method of differentiating ulcer and cholecystitis. We have scarcely even simplified it. Furthermore, it should be stated that we have seen cases of the various types of lesions discussed which do not conform to the preceding symptomatic classification. My chief aim has been, first, to call attention to the importance of adhesions in these conditions, and their influence on the clinical picture,—and second, by analysis of operated cases, to clarify if possible the inter-relationship between the three pathologic conditions. Time does not permit any detailed case reports further than brief reference to two or three illustrative cases.

1. Ramond, F., Jacquelin, C., and Barrien, H. Bull. Soc. Med. des Hop. de Paris, 1921. Vol. 45, p. 1440.
2. Friedman, G. A. Jour. Am. Med. Ass'n., 1922, Vol. 78, p. 187.

PARESIS.

A Brief Resume of Treatment.

By J. T. A. WRIGHT, M. D., Nashville, Tenn.
Second Assistant Physician.

Since the causative relationship of the spirocheta pallida to paresis has been demonstrated and proven, the attention of syphilologists and neuro-psychiatrists has been turned almost entirely toward treatment and the numerous methods tried and advocated, but up to the present with very little permanent benefit. In some few cases an apparent cure has been made which has encouraged further study, research and experimentation, with the hope that some remedy will be discovered which will destroy the spirocheta without doing material damage to the host.

Personally, I believe this will be accomplished as more remedies are experimented with; but I do not believe it will ever be done with arsenicals as the basis of treatment. Arsenic compounds are too dangerous and destructive to nervous and other tissue to be used in sufficient quantities and concentrations, and often enough to render the patient sterile and the Wassermann permanently negative. The indiscriminate use of salvarsan intravenously in paresis has probably done much more harm than ultimate good, while the direct injection

of the diluted remedy of salvarsanized serum, via lumbar puncture or cisterna magna, is entirely too hazardous for general adoption by the mass of the profession, even were such methods definitely and positively curative.

The salvarsan treatment of paresis is of very doubtful utility and has about been discarded by progressive neurologists and psychiatrists, after running the usual cycle of the much lauded new remedies, and it has lately been found that old mercurial inunctions coupled with mixed treatment give about as good results as the more complicated technique of the newer synthetic arsenicals, minus their dangers.

Reports from State Hospitals from all over the United States confirm the statements made above, and quite extensive investigation has been made in a number of hospitals for the insane, including the ones at King's Park, N. Y., Butler, R. I., Danville, Pa., Trenton, N. J., and others, besides the work done in private institutions and clinics. The results obtained at this hospital parallel those obtained by the above institutions, and, affiliated as this hospital is with Vanderbilt University and its splendid laboratories, we have had exceptionable opportunities in the pathological laboratory of studying and following up these cases from every angle, and, in fatal cases, of observing and verifying the destructive changes which have taken place in the cortex and other portions of the brain, blood vessels, etc., despite treatment.

However, I recently read in the *Journal of the A. M. A.*, an article by Corbus, O'Conor, Lincoln and Gardner, which described a very ingenious method of spinal drainage without lumbar puncture by the use of hypertonic saline solution intravenously, preparatory to the administration of the neo-arsphenamin. The authors claimed that this method vastly increased the absorption and presence of the arsenical in the cerebro-spinal fluid within a few hours by actual chemical test. The idea is ingenious and where lumbar puncture is not advisable should be used, or possibly by preference.

At the present time, the whole subject of the treatment of paresis resolves itself into one of prophylaxis, and every case of luetic infection should be treated vigorously from its inception, and from the time the chancre makes its first appearance, when it should be excised where possible and the site cauterized.

The intravenous use of the arsenicals along with other specific treatment undoubtedly has its place here and in cerebro-spinal syphilis, as a cure as well as a preventive of possible paresis, or dementia paralytica, later in the history of the case.

My studies in Pennsylvania, New York, and New Jersey, as well as in this institution, all show the impotence of vigorous specific treatment as a prophylactic measure in every case, even when given from the time of infection over a long period, by the general practitioner, into whose hand these early cases fall. Too much stress cannot be laid upon the fact that this procedure should be discarded if we are to reduce the number of paretics in our hospitals as well as ease the economic burden on the state. Therein seems to lie the crux of the whole matter.

One of the interesting studies of this disease is the clinical manifestation of a *remission* of all the symptoms and an apparent cure of the patient through some potent *medicatrix naturae*, as yet not understood,—some serum, antibody, or anti-toxin, which has up to the present defied detection, and which points the way to further research and investigation by our laboratory workers, and promises brilliant results!

Analyses, Selections, Etc.

Radium in Non-Malignant Gynecological Conditions.

C. J. Broeman, Cincinnati, says that in all cases of menorrhagia of the menopause, in which neither microscopic nor clinical investigation has disclosed any other distinct pathological condition, treatment by radium is indicated.

In women under the age of thirty-five, presenting cases of menorrhagia or metrorrhagia which have resisted all medical treatment, the use of radium is indicated, but extreme care must be tken to employ only a moderate dosage.

In the treatment of uterine fibroids, radium is the treatment of choice, if the fibroid has not extended above the umbilicus, and has not evidenced pressure symptoms. It should be employed in all cases where surgery is absolutely contra-indicated.

If radium is to supercede surgery in any

non-malignant pelvic disorder, it will probably be in the treatment of uterine fibroids. (*West Virginia Medical Journal, Sept.* 1921).

Radium in Dermatology.

Radium is proving a most valuable addition to the equipment of the dermatologist, according to C. J. Broeman, of Cincinnati. The results upon basal-celled epithelioma are especially good. The half-strength ten milligram radium plaque is the best apparatus for these cases. Radium is especially useful in working about the eyes and eye-lids. Endothelioma of the face responds quickly to radium therapy.

Epithelioma of the lip is especially adapted for radium treatment, and very brilliant results have been obtained in cases where it has been employed.

The author has had satisfactory results in treating such conditions as plantar warts, keloids, acne rosacea, intractable pruritis, keratosis senilis, psoriasis, lichen planus, lupus and tubercular skin conditions.

It is the treatment of choice in angioma, lymphangioma, leucoplakia, and eczema of the lips. Radium cures cases of sycosis when all other usual methods fail.

The author reports eight cases of lupus erythematosis of the mucous membrance cured with radium.

He described a different technique for the treatment of extensive hypertrichosis with radium, and reports his successful results in all cases. The cosmetic result is superior to any other known method.

He has treated successfully cases of epithelioma and papilloma of the cornea, vernal catarrh and other eye conditions referred by oculists. (*Ohio State Medical Journal, Dec.*, 1921.)

Syphilis of the Stomach.

Report of lecture delivered at a meeting of the Royal Society of Medicine. Monod said this question was of great interest because the treatment and life of the patient depended on correct diagnosis. He thinks the frequency is increasing, but the English records are surprisingly low compared to the French and American ones. Discussion of the clinical types follows: (a) Neuralgic or chronic dyspeptic, (b) ulcer, (c) pseudo-cancer, (d) stenosis, (e) linitis, (f) tabes.

All these types may occur in hereditary syphilis. In children there are two special types, the symptoms of which are: (a) gastric hemorrhage in the newborn: (b) chronic vomiting without acetonaemia.

For diagnosis, Wassermann and Stern's reaction are recommended, also screen examination. The action of potassium iodide proves a useful test. In syphilis of the stomach the organ seems to crave this drug, which leads to improvement.

The treatment advised is the use of mercury, potassium iodide and salvarsan, combined sometimes with tartro-bismuthate of potassium. Surgical intervention is called for in some cases where there has been scar tissue formation. (Gustave Monod, Lancet, London, December 3, 1921).

Limitations to the Use of Quinine Intravenously in he Treatment of Malaria.

Asst. Surgeon Kenneth F. Maxcy, U. S. P. H. S., in an interesting study on this subject, states that, in those cases in which the clinician decides that the intravenous injection of quinine for malaria is warranted, the effect of the drug on the patient must be borne in mind. Further, its administration should be discontinued as soon as the clinical indications which rendered its use advisable have subsided and cinchonization continued by mouth administration until the acute attack is relieved. The eight weeks or more of after-treatment necessary for sterilization of the patient's blood should always follow.

The cardinal principles to be observed in its administration are: Careful aspetic technique; giving the drug in moderate doses and in dilution; introducing the solution into the blood stream slowly.

He draws the following conclusions:—

1. The dangers in the intravenous injection of quinine in the treatment of malaria are: Depression of the circulation; disagreeable and alarming nervous phenomena; and local necrosis and sloughing at the point of injection.

2. No evidence is found to indicate that this route possesses special advantages over ordinary mouth administration of the drug in curing the acute attack or in ridding the blood stream of sexual forms (crescents), except with regard to the speed with which therapeutic control may be initiated.

3. The method should be reserved for those cases with urgent clinical indications or in

which mouth administration of the drug is impracticable for any reason.

4. The untoward effects which may result from intravenous administration of quinine may be largely avoided by rigorously observing certain precautions similar to those found necessary in the injection of such drugs as salvarsan. (*Public Health Reports*, March 24, 1922).

Secretary's Announcement

Quackery and Nostrums.

The General Assembly adjourned without amending the present Medical Practice Act. Notwithstanding the vigorous efforts of the chiropractors and their paid lobbyists to have a special board of examiners created for their cult, their bill never got out of the committee room to the floor of the House of Delegates. The committee seemed greatly impressed with the necessity for amending the present act so as to secure more promptly convictions for those who violate the law.

These chiropractors seem bent on taking advantage of the present high educational standards required of regular practitioners—getting in their people with practically no preliminary training and less technical preparation, as chiropractors, who then forthwith degenerate into low-grade general practitioners. A representative of one of the large medical book publishers informs us that he regularly sells his books to these people.

The organized medical profession has a great responsibility regarding this and other forms of quackery. The public has been fooled from time immemorial by fakirs and sleight of hand artists who wish to break into the healing profession. No matter how well-informed the medical profession is regarding these quacks the public reads their optimistic advertisements and immediately becomes new objects of their mercenary attentions. What is needed in this State is a campaign to educate the public regarding the prevention of disease with sufficient information regarding the various forms of quackery which will prevent their easy multiplication in the State. A great public health association embracing the medical profession, the dental profession, the State health authorities, tuberculosis associations, various public clinics and the educational forces of the State would in a brief time eradicate the commoner forms of contagious and infectious diseases chiefly by the spread of information. Such an organization could add to its work the duty of informing the public about quacks and nostrums and bring its influence to bear on legislation to prevent their easy access to this State.

All volunteer public health work of this kind should be initiated and directed by local medical societies in conjunction with the local health authorities.

Attend the A. M. A. Meeting.

A large number of physicians from Virginia and adjoining states should make their arrangements to attend the meeting of the American Medical Association in St. Louis, May 22nd to 26th inclusive. The Chesapeake and Ohio railway has offered to make up a special train leaving Richmond on Monday at 7 P. M., which will arrive in St. Louis about 9 P. M. the following evening. Leaving at this hour gives their passengers the day end of the trip through the beautiful mountain country of West Virginia and the fine agricultural sections between Cincinnati and St. Louis, in Indiana and Illinois. In order to secure the train, it is necessary that one hundred and twenty-five tickets be sold. Members of the Association and others who may wish to take advantage of this train should notify the Secretary of the Medical Society of Virginia, Richmond, without delay. In case that number is not secured the railroad will put on its regular trains sufficient additional cars to handle the increased travel. Rates from several important cities in Virginia and other states for this trip are given on advertising page 2.

G. H. Winfrey, *Secretary-Treasurer.*

"Captain."

To the Editor:—

The Plains, Va., March 3, 1922.

Startled from a sound sleep at 3 o'clock at night by the ringing of the church bell and the cry of "Fire," I sprang to the window to see the blaze bursting from the windows of my stable.

Throwing on some clothing and seizing an axe I rushed out with but the single thought, to cut in and save my horse if possible.

But when I got there the flames were al-

ready bursting out on all sides and some one said, "Doctor we are too late, we can't get to him." Then, helplessly I realized that my noble friend had already met an awful death.

For 15 years he had carried me on his back. Many, many thousand miles, through mud, snow and storm, through swollen streams and mountain fastness, through places no machine could ever penetrate, always willing and ready to go, there was never a night so dark or cold, nor a road so rough or long that he would not take me safely over it, if I asked him to.

Such was "Captain" faithful and true to the end.

Truly, there are many things in life that it is not given us to understand,—in this life.—But as we are promised that, "What ye know not now ye shall know hereafter" so let us hold on to faith, trusting and believing that we shall know and understand all things in His own good time.

RICHARD MASON, M. D.

The Truth About Medicine

During February the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Persson Laboratories:
- Bacillus Coli Antigen (No. 50) Persson
- Furunculosis Vaccine Mixed (No. 37) Persson
- Gonococcus Antigen (No. 47) Persson
- Staphylococcus Aureus Antigen (No. 49) Persson
- Streptococcus Antigen (No. 48) Persson
- Pneumonia Vaccine (No. 36) Persson

Powers-Weightman-Rosengarten Co.:
- Novarsenobenzol—Billon

G. H. Sherman:
- Whooping Cough Vaccine—Sherman
- Mixed Typhoid Vaccine—Sherman
- Acne Staphylococcus Vaccine—Sherman

Winthrop Chemical Co.:
- Alypin

Book Announcements

Opiate Addiction. Its Handling and Treatment. By EDWARD HUNTINGTON WILLIAMS, M. D., Formerly Associate Professor of Pathology, State University of Iowa; Special Lecturer on Criminology and Mental Hygiene, State University of California; etc. New York. The Macmillan Company. 1922. Cloth 12 mo. 194 pages. Price, $1.75.

The National Tuberculosis Association

Will hold its eighteenth annual meeting May 4, 5, and 6 in Washington, D. C. at the First Congregational Church, corner of 10th and G Streets, N. W. The meeting will be held immediately following that of the Triennial Congress of Physicians and Surgeons, which concludes its session in Washington on May 4th.

Those who contemplate attending the meeting should get in communication with the Virginia Tuberculosis Association, 611 Chamber of Commerce Building, Richmond, Virginia, which will be glad to furnish information relative to the program and reduction in fares.

Another Office Building Planned for Physicians.

It is announced that contract has been awarded for the erection of a seven-story office building for physicians and dentists, to be erected at the corner of Franklin and Second Streets, this city. It is to cost $250,000 and work upon it will be commenced at an early date. It will contain thirty-one suites for offices.

Dr. Cochran Honored.

As a tribute to the memory of the late Dr. Jerome Cochran, founder of the Medical Association of the State of Alabama and for a number of years, until his death in the late nineties, state health officer of Alabama, a bronze bust of him has been placed in the entrance of the building of the State Health Department in Montgomery.

Receipts from Xmas Seal Sales.

To the middle of March, the Virginia Tuberculosis Association had received $51,106.76 from the sale of Christmas seals, with seven counties to be heard from. It was expected that, when all reports were in, the collections would approximate $53,000. The sales were materially larger than in previous years.

That National Tuberculosis Association has just sent out a preliminary report of the Seal Sale for the United States, which shows that Virginia leads all the Southern States with the exception of Texas, and is the twentieth in the entire country.

Eugenical News,

Published at Cold Spring Harbor, L. I., N. Y., with its March issue, enters upon an enlarged magazine form. This would indicate an increased interest in the subject of eugenics. We wish the magazine success.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1871.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 April, 1922 No. 1

Editorial

The Blood Supply of the Heart.*

Any one who brings forward a new item of knowledge concerning the heart, anatomically, physiologically, or pathologically, confers upon the science of medicine a praiseworthy contribution. The anatomical arrangement of the blood-vessels of the heart has interested investigators and clinicians since the middle of the sixteenth century. Very painstaking and skillful dissections of the coronary arteries have been made by a number of workers and much of the present-day knowledge of the coronary circulation was obtained by this method. Dissections, alone, of the coronary arteries were found to be quite insufficient for the solution of some of the questions involved. So, the injections of the blood vessels of the heart with metals, with wax, with paste of salts of heavy metals, with colloidal silver, with paraffin, with starch, with water and with gelatines, were employed in connection with dissections and roentgenography; from these methods new facts were secured. But it was after the introduction and use of the stereoscopic method of roentgenography that the great advantage of the x-rays was obtained. Gross carefully considered the technique employed by others and therefrom has evolved methods which apparently have added important details to our knowledge of the circulation of the heart.

One may recall that the chief blood supply of the heart is maintained through the two coronary arteries and that "the right arises from the aorta slightly below the level of the the right anterior aortic cusp;" and the left "arises from left anterior sinus of Valsalva just a little below the level of the free edge of the corresponding aortic cusp."

These main vessels with subdivisions can be easily seen beneath the pericardium; further, they subdivide and penetrate the heart musculature. In addition to this, there is a group of vessels known as the fat branches (arterial telae adiposae) which occupy an interesting anatomical and functional relation to the blood supply of the heart. These are found under the pericardium. They arise from the coronary arteries.

Gross, with outstanding success, has studied the marked variations which are found in the distribution of the coronary arteries, and he has also averaged these variations and given us the results in description and roentgenogram. Gross, also, has discussed the blood supply of the neuromuscular mechanism of the heart. The importance of establishing the origin and manner of blood-supply to this highly specialized heart tissue is at once evident. From a study of 100 hearts, Gross has formed the opinion that "a distinct and specific blood supply exists for both sino-auricular and auriclo-ventricular nodes, the main bundle, the first portion of the left limb and a large portion of the right limb of the neuro-muscular system." The sino-auricular node is supplied by a stout branch which arises close to the origin of the right coronary or sino-auricular branches: rami ostii cavae superiores.

The auriculo-ventricular node is supplied by the ramus septi fibrosi which arises invariably from the right coronary artery and receives anastomosis from the superior septal branches of the left coronary artery. The right limb of neuro-muscular bundle gets its blood supply by a stout vessel (ramus limbi dextri) from the ramus descendens sinister and its base penetrates and anastomoses with other branches of the coronary. The left limb of the neuromuscular bundle has no specific blood supply but derives its blood supply from the rich anastomosis of the septum vessels.

The clinical significance of this individual

*The Blood Supply of the Heart in its Anatomcal and Clinical Aspects, by Louis Gross, M. D., C. M. Douglas Fellow in Pathology McGill University, and Research Associate, Rolay Victoria Hospital, Montreal. Published by Paul B. Hoeber, New York.

blood supply of this cardiac structure appears to have a decided clinical significance. It has been shown that in this special tissue there may be pathology unlike or apart from what is found in general musculature; there may be a functional disturbance of this bundle due to the blockage at the coronary.

Gross, also, has pointed out that the heart valves have a more or less definite blood supply. He has arranged his conclusions in the following order:

1. Fetal valves contain musculature on right and left sides, the right probably being richer in blood vessels.
2. Fetal valvular endocarditis is found more frequently on the right side.
3. Regression of musculature and blood vessels occurs as age advances, but infants' valves still frequently contain both.
4. Infants are frequently attacked by valvular endocarditis.
5. In adults valvular endocarditis is not as frequent as in children but occurs with preference on the aortic cusp of the mitral valves.
6. The aortic cusp of the mitral valve is the last to show regression of musculature and the most frequently injected leaf.
7. Practically all cases of valvular endocarditis show distinct vasculature.
8. Relatively few normal heart valves show in the adult a vasculature, etc.

For years the long controversy, whether or not there is anastomosis between the coronary arteries, has remained unsettled. Gross, after a study of this matter reaches the following conclusions:

1. Anastomosis exists between the right and left coronary arteries both in their capillary as well as in precapillary distribution.
2. Anastomosis exists between the branches of each coronary artery.
3. Anastomosis exists between the coronary arteries and vessels from adjacent and attached organs.
4. Anastomosis in the heart is universal and abundant.

Last, Gross, discusses the changes found in the heart at various stages of life. He brings out interesting facts concerning the evolution of coronary arteries as to the changes of distribution as age increases. These changes are illustrated by roentgenogram of the blood supply of the heart at birth, in the first decade, in the second decade, in the third decade, in the fourth decade, in the fifth decade, in the sixth decade, in the seventh decade, and in the eighth decade. With each decade there is a well marked change in the vascularity of the heart: at birth the right ventrical shows the greater richness of vessels, with the second decade there is an increase of the left, the third shows greater increase, and so on until the seventh and eighth decades when the right heart shows marked decrease in blood supply as compared with the left.

Gross concludes his valuable monograph with the following observation: "As old age approaches, the individual is ushered into an era of many dangers through right-sided heart decline. Thus, the possible death by right-sided heart paralysis in infectious diseases increases with age, and death from pneumonia in old age, so frequent that it is practically 'physiological,' comes perhaps somewhat nearer to our comprehension when we consider that this lagging right-sided circulation, reacting upon the right ventricle, produces a physiolgical right-sided decline or increasing heart failure." Then, is not "a man as old as his right coronary artery"?

Kidney and Uremic Tests.*

The "once done test" in medicine cannot be relied upon; no matter in what field one may be applying it. New tests of disease are discovered and forthwith receive at the hands of writers in medicine considerable prominence, tending often to give the impression that the new discovery approaches infallibility and finality in application. In this way, new tests are used with high expectations. But unfortunately, clinical experience soon suffers disappointment at the revelation that the new tests are failing invariably to disclose facts concerning clinical states for which the tests were advocated so favorably.

Something of this sort is happening in the use of certain tests in our effort to estimate kidney function and uremic states. The phthalein test and the level of blood nitrogen retention in nephritis often fail to run a confirmatory reading. Often in acute nephritis cases the low phthalein and high blood urea parallel is not found. No once-made test can be relied upon. The more dependable method is to make repeated tests. In acute nephritis, dye excretion may be normal at certain readings and the blood urea may be increased; and

*For reference see: Oxford Medicine Vol. III, page 637 and others.

the opposed relation may be found in other cases or at other times in the same case.

The reasonable explanation of this conflict of tests is (1) that at the time of the application of the tests the kidney may be permeable to dye while the kidney cells may be impermeable to blood nitrogen constituents; (2) that the dye test is a test of the "then" state of the kidney while the occurrence of an increased blood urea (which runs parallel with non-protein nitrogenous elements of the blood) is a test of the defective kidney elimination involving the duration of time; (3) that the discrepancies between these efforts at judging kidney disease may result from the unknown conditions controlling the retention of nitrogenous bodies in the blood stream; (4) that under certain conditions the body tissue may be highly toxic resulting from kidney disease and yet the blood stream may not be highly charged with these elements because of the above mentioned retention of poisons in the body fluids and tissues.

However, practically and clinically considered, these tests are of marked significance, when frequently made and properly related to the urine output, the chemical and microscopical examination of the urine, the blood pressure readings, the observation of the eye grounds the examination of the heart and other clinical facts.

That unknown group of poisons, hypothetically assigned as the cause of uremia, are very elusive and no one test can be relied upon for unfailing detection. Broadly speaking, then in acute nephritis and in chronic nephritis, there are varations to be accounted for. Usually in acute nephritis the low phthalein and increased blood urea are to be expected, while in chronic nephritis with edema there is defective water, sodium chloride and dye elimination and, yet, in the blood a normal blood nitrogen is found. Also, in cases of chronic nephritis without edema, in the early stage, the dye test may be normal, but usually in the late stage the excretion is low, and just before the circulation fails the output of dye may be nil; in such cases the blood urea usually is increased.

Abstracted Articles.

The Journal of the American Medical Association has reached the remarkable weekly circulation of eighty odd thousand copies. It is a great national medical journal; it is America's last word as a medical journal which has for its object the weekly dissemination of the world's current medical knowledge; it is the "morning newspaper" of medicine, printing "news fit to print" in medical sciences for the information of the doctors of this great country. Without its weekly perusal, a doctor must necessarily miss much of current literature; with its careful reading each week from cover to cover, a doctor may feel that he has his "finger on the pulse" of current medical literature of the world.

Indeed, it is a journal of which the medical profession may justly be proud.

That critics may think that they can improve it; that there may be those here and there who may find food for criticism; that some may think and say that the journal should be and do so and so, we do not attempt to gainsay. But, nevertheless, it is a great medical journal and worthy of our support and confidence; the critics, probably, could produce no greater. For this reason, we are glad to state that the national Journal has complimented our contributors by abstracting articles appearing in the Virginia Medical Monthy, which is owened by and conducted in the interests of the members of the Medical Society of Virginia.

The following list of titles and authors shows that each issue of the Virginia Medical Monthly for more than a year, excepting January, February and May 1921, has had one or more articles abstracted in "Current Medical Literature" in the Journal of the American Medical Association.

In April 16, 1921, issue of J. A. M. A., from our *March* issue: Certain types of Cerebral Manifestations in Cardiorenal Diseases.—W. H. Higgins, M. D., Richmond.

Pulmonary Abcess Following Tonsillectomy Under Local Anesthesia.—W. B. Porter, M. D., Richmond.

In May 21, 1921, J. A. M. A., from our *April* issue: Pituitary Headache.—F. H. Redwood, M. D., Norfolk.

In July 2, 1921, J. A. M. A., from our *June* issue: Case of General Infection Due to Colon Bacillus.—B. A. Pope, M. D., Newsoms, Va.

In August 27, 1921, J. A. M. A., from our *July* issue: Ocular Interpretations of Disorders of Pituitray Body and Their Nonsurgical Treatment.—G. E. DeSchweinitz, M. D., Philadelphia.

Surgical Treatment of Certain Types of Dyspepsia.—Stuart McGuire, M. D., Richmond.

Migrainous and Pituitary Headaches Contrasted.—J. A. Hodges, M. D., Richmond.

Circumcision Prevents Syphilis.—Alexander Irvine, M. D., McDowell, W. Va.

In September 10, 1921, J. A. M. A., from our *August* issue: Laryngeal Tuberculosis with Special Reference to Sunlight Treatment.—Frank B. Stafford, M. D., Blue Ridge Sanat., Charlottesville, Va.

Syphilis of Stomach.—F. C. Rinker, M. D., Norfolk, Va.

In October 8, 1921, J. A. M. A., from our *September* issue: Unusual Relapse in Typhoid Fever.—Wm. H. Higgins, M. D., Richmond.

In November 5, 1921, J. A. M. A., from our *October* issue: Rupture of Heart.—J. S. Davis, M. D., University, Va.

Drug Therapy in Epilepsy.—Victor R. Small, M. D., Raleigh, N. C.

In December 10, 1921, J. A. M. A., from our *November* issue: Diverticulitis of Sigmoid.—Wm. J. Mayo, M. D., Rochester, Minn.

Public Health and School. — E. G. Williams, M. D., Richmond.

In Jaunary 21, 1922, J. A. M. A., from our *December* issue: Unusual Tumor of Overy.— W. E. Darnall, M. D., Atlantic City, N. J.

In February 11, 1922, J. A. M. A., from our *January* issue: Adenoma of Pituitary. —Jas. W. Hunter Jr., M. D., Norfolk.

Globus Diospyri Virginianae Seminum; Report of Case.—W. L. Peple, M. D., Richmond.

In March 11, 1922, J. A. M. A., from our *February* issue: Advantages and Limitations of Skin Tests for Protein Sensitization in Brochial Asthma, Hay Fever and Allied Conditions.—J. M. Hutcheson, M. D., Richmond.

Chronic Pancreatitis.—A. G. Brown, Jr., M. D., Richmond.

Recurring Volvulus of Descending Colon and Sigmoid Flexure with Megacolon.—Murat Willis, M. D., Richmond.

News Notes

Physical Standards for Children.

The U. S. Public Health Service has for a long time been occupied in various parts of the country in an investigation of physical standards for children. The common test of a child's health development, and about the only test that can be applied to children in mass, is to ascertain by some standard table of age-weights whether or not children weigh as much as they should at their age. If the child is ten per cent. or more under standard, it is considered to be under-nourished and is treated accordingly. This, however, may or may not be the case, for the standard tables are largely approximations. Nevertheless, they serve a useful purpose, by calling attention to individual children and causing a more careful examination to determine whether the sub-standard weight is due to remediable cause.

From some data secured by the Children's Bureau, Washington, on heights and weights of children under six years of age, we note the following items of interest: Boys under six years of age were found to average from one-third to one-half an inch taller and to weigh about a pound more than girls of the same age. They were also heavier than girls of the same stature. Children in rural areas slightly exceeded the average for city children, both in stature and in weight, while the heights and weights of negro children under four years of age, as compared with heights and weights of white children of the same ages, showed a deficiency in weight of eleven ounces for boys and nine ounces for girls, and height deficiencies of two-fifths and one-fifth inches, respectively. These deficiencies, greatest at one year of age and under, may result from the poor nutrition and unfavorable social and economic conditions that cause a high mortality rate among colored infants, or may be due to a racial difference in rate of growth. At five years of age, practically no difference in average height and weight is found between white and negro children.

A. M. A. Meeting.

The official call has been issued for the seventy-third annual session of the American Medical Association to be held in St. Louis, Mo., May 22-26, 1922, under the presidency of Dr. Hubert Work. The House of Delegates will convene on Monday the 22nd, but the scientific assembly will open with the general meeting on Tuesday the 23rd, at 8:30 p. m. A large attendance is anticipated and reservations should be made in advance. Take up this matter at once with Dr. Louis H. Behrens, chairman of Committee on Hotels, 3525 Pine Street, St. Louis, unless you prefer to arrange directly with your hotel.

It is probable that railroads all over the country may allow special rates to fellows of the Association and dependent members of their families. As a means of preparedness you should at once secure your Identification Certificate by sending a self addressed, stamped envelope to the Secretary of the A. M. A., 535 North Dearborn Street, Chicago.

Announcement of the Medical Fellowships.

The National Research Council announces the establishment of Fellowships in Medicine created for the purpose of increasing the supply of thoroughly qualified teachers in medicine in both clinical and laboratory subjects and in both curative and preventive aspects. The fellowships are supported by appropriations of the Rockfeller Foundation and the General Education Board amounting in total to one hundred thousand a year, for a period of five years. Those receiving awards will be known as Fellows in Medicine of the National Research Council.

To qualify for appointment as a fellow, a candidate must have the degree of Doctor of Medicine or Doctor of Philosophy from an approved university, or preparation equivalent to that represented by one of these degrees. Only citizens of the United States or Canada will ordinarily be appointed, although the fellowship board is authorized to set aside this provision in exceptional cases. The fellowships will be open to both sexes.

Since the principal purpose of establishing these fellowships is to increase the number of competent teachers in the field of medicine, each incumbent will be required to gain experience in teaching. As creative work is regarded as essential to the best teaching, emphasis will also be placed upon research.

Fellows will be at liberty to choose the institutions or universities in which they will work, as well as the men under whose direction they will carry on their researches, subject to the approval of the fellowship board.

Appointments are to be made for a period of twelve months, beginning at any time in the year, with an allowance of six weeks for vacation. The time may be extended, however, if in the judgment of the board the work which the fellow has done justifies it. The stipends are not definitely fixed in amount; but they are intended to enable the individual to live comfortably while carrying on his special work as a fellow.

The fellowships will be administered by a special committee, known as the Medical Fellowship Board of the National Research Council.

Correspondence concerning the fellowships should be addressed to the Division of Medical Sciences, National Research Council, Washington, D. C.

National Hospital Day.

May 12th, the anniversary of the birth of Florence Nightingale, will be observed as the second annual National Hospital Day. About 1,500 hospitals throughout United States and Canada took part in the 1921 observance and it is estimated that more than 250,000 people visited the hospitals and showed their interest in many practical ways. Many applicants for nurses schools were interested through this movement and a number of hospitals reported donations of supplies and equipment. This year it is expected that many more hospitals will observe the day and England and Australia are also interested in the movement.

All hospitals desiring suggestions for a program or additional information concerning National Hospital Day may obtain same from Matthew O. Foley, Executive Secretary, National Hospital Day Committee, 537 S. Dearborn Street, Chicago, Ill. There is no charge for this service.

Appropriations For Ambulatory Sick.

Dr. Howard Urbach, Superintendent of the Dispensary of the Medical College of Virginia, Richmond, was, about a year ago, authorized by the Executive Committee of that school, to make a survey of 100 of the largest cities of the United States to ascertain the amount of money being appropriated by them for the treatment of the ambulatory sick. Some interesting facts were elicited. Sixteen cities were visited personally and questionnaires sent eighty-four, ten of which did not reply. Of the ninety cities reporting, five make no appropriations. This does not necessarily mean that the ambulatory sick are not provided for in these cities, as a few cities have clinics supported by Community Chests.

The eighty-five cities on which his report was based, containing about one-fifth of the population of the United States, gave an average per capita appropriation for this work of thirteen cents. This appropriation was all the way from a fraction of one cent to fifty cents per capita. There were forty-one cities which reported an appropriation of less than ten cents per capita. Of Virginia cities reporting, Norfolk showed an average per capita of twenty-one cents and Richmond five cents.

In some cases an average had to be approximated, due to the fact that the amount used for treatment of the ambulatory sick was covered by a budget for use of more than one department.

Virginia Baptist Hospital.

The executive committee of the Virginia Baptist Hospital is having plans prepared for its 200-bed, three-unit hospital, to be erected just outside of Lynchburg, Va. About $125,000 of the $200,000 appropriation is now available and it is planned to erect the central unit this year. Dr. Winford H. Smith, of Johns Hopkins University, Baltimore, has been selected as consulting superintendent for the plans.

Dr. A. Jeff Nelson,

Of Seattle, Wash., a former Virginian and a member of the Medical Society of Virginia, is to be in charge of the Yoghurt Sanatorium, Inc., of Bellingham, Wash. The Fairhaven Hotel, of Bellingham, has been purchased by a corporation and is to be converted into the above named institution with 100 rooms.

The American Proctologic Society

Is to hold its twenty-third annual meeting in St. Louis, May 22-23, with headquarters at Hotel Claridge. An interesting program has been arranged. Dr. Granville Hanes, of Louisville, Ky., is president, and Dr. Ralph W. Jackson, of Fall River, Mass., secretary.

Married.

Dr. Frank L. Ray, Charlotte, N. C., and Miss Ethel Graham Woods, Purley, N. C., March 19. Dr. Ray was a member of the class of '19, Medical College of Virginia, and Mrs. Ray was was a graduate of the Memorial Hospital Training School for Nurses, Richmond.

Gift to Rutherford Hospital.

We are advised that a gift of $100,000 has been made to Rutherford Hospital, at Rutherfordton, N. C., for the purpose of equipping the hospital for radium treatment. This gift has been made by J. C. Plonk, of Hickory, N. C., as a memorial to his wife.

The American Gynecological Society

Is to hold its forty-seventh annual meeting in Washington, D. C., May 1, 2 and 3, with headquarters at Hotel Washington. Dr. Geo. Gray Ward, Jr., New York City, is president, and Dr. A. H. Curtis, Chicago, is secretary.

Dr. J. Kennedy Corss,

Newport News, Va., has been appointed delegate from the Medical Society of Virginia to the annual meeting of the Medical and Chirurgical Faculty of the State of Maryland, in Baltimore, the latter part of April.

The Medical Society of the State of N. C.

Will hold its annual meeting in Winston-Salem, April 25, 26 and 27, with headquarters at Robert E. Lee Hotel. Dr. Hubert A. Royster, of Raleigh, is president, and Dr. L. B. McBrayer, of Sanatorium, secretary. A large attendance is expected and an interesting meeting anticipated.

Drs. James H. Culpepper, of Norfolk, and J. Allison Hodges, of Richmond, will attend this meeting as delegates from the Medical Society of Virginia.

Dr. and Mrs. H. W. Porter,

Louisa, Va., were recent visitors in Richmond.

Dr. F. N. Nichols

Has returned to his home at Purcellville, Va., after a short visit to Greensboro, N. C.

Major Alfred P. Upshur, M. C.,

Son of Dr. and Mrs. John N. Upshur, of this city, has been detached from Walter Reed Hospital, Washington, and ordered to the general hospital at Ft. Sam Houston, Texas, where he is to be chief of the medical service.

Dr. William Meyer,

Formerly of Enfield, N. C., has recently located at Messick, York County, Va. Dr. Meyer is a graduate of the Medical College of Virginia in the class of '18, at which time he received appointment as intern at Johnston Willis Sanatorium, this city.

Blindness in the United States.

According to *Rehabilitation News Notes*, the Bureau of Census gives the total number of blind persons in the United States for 1920 as 52,617, or an average of one to about every 2,000 population. This is a slight decrease from the 1910 figure. As to geographical distribution, the New England States had the greatest amount of blindness while the lowest was in the West South Central States. It is further stated that 15,000 of the above number are industrially blind in the United States.

New Hospital Chartered for Colored People.

The Sarah G. Jones Memorial Hospital, Medical College and Training School for Nurses, Inc., Richmond, has been granted a charter by the State Corporation Commission. It is a non-stock corporation and its purpose is to furnish free hospital accommodation to the colored population.

Dr. R. R. Nevitte,

Temperanceville, Va., had the misfortune to lose his home by fire on the night of March 4. So rapidly did the fire spread that he, his wife and children were forced to flee to safety without saving any of their furniture or personal effects. The loss is estimated at about $20,000.

Dr. R. C. Fravel,

Of Richmond, was recently called to Woodstock, Va., on account of the death of his father.

Dr. George P. Hamner,

Of Lynchburg, Va., has been elected secretary of the Presbyterian League of that city.

Dr. Robert P. Kelly,

Of Lynchburg, Va., left April 2nd for Chicago, where he is taking up special work in obstetrics at the Chicago Lying-In Hospital.

Endow Cot In Memory of Dr. Edward McGuire.

Endowment of a cot in the Crippled Children's Hospital as a memorial to the late Dr. Edward McGuire, of Richmond, who spent a large part of his life as a physician in alleviating the sufferings of others, is to be undertaken by "The Edward McGuire Memorial Association." This association was recently organized here with Mr. H. L. Cabell as chairman. All friends and admirers of Dr. McGuire's have been asked to co-operate.

Dr. Mont Rogers Reid,

Of Johns Hopkins Hospital, Baltimore, delivered an address on "Some Tendencies of Medicine," at Roanoke College, Salem, Va., about the middle of March. Dr. Reid is an alumnus of Roanoke College and an associate in surgery at Johns Hopkins University.

Dr. T. Neill Barnett

Has returned to this city after taking a postgraduate course at Harvard University Medical School, Boston, and is again located at 204 East Franklin Street. He will limit his practice to diseases of the gastro-intestinal tract.

Doctors on Business Men's Committees.

At a recent meeting of the Business Men's Association of Church Hill and Fulton, this city, Dr. William H. Parker was elected vice-president and the following doctors were appointed on the various committees: Drs. R. S. Faris, B. L. Phillips A. S. Lilly, W. H. Parker, G. C. Woodson and J. W. Hannabass.

Dr. Mercer Succeeds Dr. Cole.

Dr. Waller Nelson Mercer, formerly of this city and a graduate of the Medical College of Virginia in 1914, has been appointed chief clinical physician in charge of the tuberculosis division of the Richmond Health Bureau, succeedng Dr. Dean B. Cole, recently resigned.

Dr. P. F. J. Miller,

Of Virginia Beach, Va., who has been sick for sometime at Sarah Leigh Hospital, Norfolk, is now at Apple Grove, Louisa County, Va.

The Association of American Medical Colleges,

At its annual meeting in Chicago, on March 7, elected Dr. Charles P. Emerson, of Indianapolis, president, and Dr. Fred C. Zapffe, of Chicago, secretary-treasurer. The next meeting is to be held at Ann Arbor, Mich., in 1923.

Colored Doctors Organize.

The negro physicians of Newport News, Va., have organized the Newport News Medical Society, with the following officers: President, Dr. P. A. Scott; vice-president, Dr. C. A. Eaton; treasurer, Dr. W. T. Foreman; secretary, Dr. J. H. Robinson.

The West Virginia Medical Association

Will hold its annual meeting in Huntington, May 17-19, 1922, under the presidency of Dr. George A. MacQueen, of Charleston. Dr. Robert A. Ashworth, of Moundsville, is secretary.

The Valley Medical Society

Will hold its next meeting in Harrisonburg, May 25, at 11 a. m., and will continue in session throughout the day. The program will include a discussion on cancer. This Society now has a membership of 110. Dr. Charles E. Conrad, of Harrisonburg, is president, and Dr. Alex. F. Robertson, Jr., of Staunton, secretary.

The Southside Virginia Medical Association

Met in Suffolk on the afternoon and evening of March the 14th, with a good attendance. Many scientific papers were read and discussed by the men present, the leading subject being tuberculosis.

After adjournment, the Association was tendered a banquet by the local profession.

The next meeting will be held in Norfolk on the second Tuesday in June.

R. L. Raiford, Secretary.

Fraternity Meeting at U. Va.

On the night of April 12th, several score of prominent medical alumni from all parts of the United States gathered at the University of Virgina for initiation into the medical honorary society, Alpha Omega Alpha. This society was organized at the College of Physicians and Surgeons of Chicago, in 1902. It now has twenty-six chapters in the leading medical schools of the country. The Alpha chapter of Virginia was organized in 1919. The Medical School of the University of Virginia was the second southern medical school to be granted a charter, one having been granted to Tulane University in 1914. In 1920, a chapter was established at the University of Texas.

Dr. Henry A. Christian, Hersey professor of medicine at Harvard University, delivered an address, following the initiation ceremonies. The exercises were held in Madison Hall, and were open to the general public.

National Negro Health Week

Was held for the eighth year from April 2 to 8, 1922, at which time it was again emphasized that a large number of deaths among this part of the populaton could be prevented by improvement in hygienic conditions. Census returns show that the negro death rate is steadily decreasing and is no higher today than that of New York State and Boston was forty years ago. In the last eight years, the death rate of negro policy holders in one of the great New York life insurance companies has been reduced nine per cent. This should be evidence of the fact that the American negro is not necessarily short lived or especially liable to disease.

Dr. W. P. Hoy

Was a member of the Petersburg, Va., delegation attending the Seventh District Rotary Conference in Winston-Salem, N. C., the latter part of March.

Dr. H. H. Foster,

Who has been practising at Branchville, Va., has now located at Macon, N. C.

Dr. W. F. Henderson,

Of Blacksburg, Va., has been spending sometime in Florida, recuperating from a severe case of illness.

Dr. and Mrs. R. E. Booker

Have returned to their home in Lottsburg, Va., after a month's visit to Florida and Cuba.

Dr. and Mrs. B. B. McCutchan,

Clifton Forge, Va., were recent visitors in this city.

Dr. E. C. Levy,

Director of Public Welfare of Richmond, attended a conference of the American Public Health Association in Washington, the middle of March. This conference was attended by health officials from the leading cities and representatives of universities and colleges.

Fredericksburg Normal Adds Degree Courses.

The State Normal School for Women at Fredericksburg, Va., is expanding its curriculum for the session 1922-23 by the addition of four differentiated four year degree courses, leading to the degree of B. S. in Education. These courses are in Physical Education and Supervision; Public School Music and Supervision; fine and Industrial Arts and Supervision; Commercial Teacher Training Course. Additional members of the faculty will be procured to carry the courses.

Dr. S. P. Oast,

Formerly of Norfolk, Va., is now at the New York Eye and Ear Infirmary, New York City.

Members of Medical Examining Board of Virginia Reappointed.

Governor Trinkle has announced the appointment of the following as members of this Board for a period of four years: Drs. J. H. Ayres, Accomac; Philip St. L. Moncure, Norfolk; H. U. Stephension, Toano; J. Bolling Jones, Petersburg; I. C. Harrison, Danville; John W. Preston, Roanoke; P. W. Boyd, Winchester; S. W. Maphis, Warrenton; W. W. Chaffin, Pulaski; Robert Glasgow, Lexington, as the allopathic members; Dr. G. W. Johnson, Danville, as the homeopathic; and Dr. E. H. Shackelford, Richmond, as the osteopathic member. The only new appointee is the homeopathic member.

Physicians Asked to Endorse Road Bonds.

The Tidewater Automobile Association is asking physicians throughout the State to endorse the proposed special session of the General Assembly to vote for good roads bonds. It is stated that the Norfolk County Medical Association has adopted resolutions favoring this measure, as has also the Southside Virginia Medical Association, which is composed of a representative class of doctors practicing in the rural sections.

Dr. R. H. Latane,

Buchanan, Va., was a recent visitor in this city.

Dr. J. K. Caldwell,

Galax, Va., recently spent a short time in Greensboro, N. C.

Dr. Perkins Glover,

Arvonia, Va., was recently in this city on professional business.

Hilltop Sanatorium,

The new municipal tuberculosis sanatorium of Danville, Va., has just been opened. The building was erected by public subscription and is to be maintained by local donations. It will have an x-ray equipment for the purpose of examining lungs and has had a gift

made it of a radio receiving outfit for the entertainment of the patients.

Dr. J. J. Nelson, Sr.,

Of Columbia, Va., who was quite sick in the early Spring is now much improved.

Dr. and Mrs. John Randolph,

Of Arvonia, Va., were recent visitors in this city.

The National Board of Medical Examiners

Announces the following dates for the next two examinations:

Part I and II, June 19, 20, 21, 22, and 23, 1922.

Part I and II, September 25, 26, 27, 28, and 29, 1922.

Applications for the June examination should be in the Secretary's Office not later than May 15th, and for the September examination not later than June 1st. Application blanks and circulars of information may be had by writing to the Secretary, Dr. J. Rodman, 1310 Medical Arts Building, Philadelphia, Pa.

Student Nurses Needed for Public Health Service.

The U. S. Civil Service Commission, Washington, D. C., announces an open competitive examination for student nurse, receipt of applications to close May 9. The salary will be $30 a month, with quarters, subsistence and laundry, for the first two years, and $50 a month with the same perquisites for the remaining one year. Applicants should be between twenty-one and thirty-five years of age. This examination is open to all citizens of the United States who meet the requirements, both men and women. For further information, address the above named Commission.

Arkansas "Home Coming Meeting.

A notice from the secretary of the Arkansas Medical Society, Dr. Wm. R. Bathurst, Little Rock, states that the motif of the coming annual session, to be held in Little Rock, May 17-19 next, is to be the "home-coming" meeting, and they are anxious to have all ex-Arkansas doctors attend. This is an especially appropriate time for the gathering, as those who contemplate attending the meeting of the American Medical Association can stop off at Little Rock, renew old acquaintances, and resume their journey.

Dr. and Mrs. G. G. Painter,

Pulaski, Va., recently enjoyed a visit to their daughter in Abingdon, Va.

Dr. J. H. Rawlings

Has been elected one of the directors of the Lynchburg, Va., Boat Club.

Dr. Lawrence T. Price

Has been elected president of the Commercial League, one of the amateur baseball organizations of Richmond.

The Southwestern Virginia Medical Society

Will hold its semi-annual meeting in Pulaski, May 11 and 12, under the presidency of Dr. A. B. Greiner, of Rural Retreat. A subscription banquet will be held the first night. On the second day, there will be a symposium on "Pneumonia," which will be handled by Drs. Paul Davis, G. B. Lawson, S. S. Gale, and J. T. McKinney, all of Roanoke. The program also includes the titles of other interesting papers. Dr. E. G. Gill, of Roanoke, is secretary-treasurer of this society.

The Walter Reed Medical Society,

Organized about a year ago, is to have another meeting on May 10 and 11, in Williamsburg, Va. The Williamsburg doctors are enthusiastic over the prospects of the session and a fine meeting is anticipated. Present officers are:—President, Dr. H. A. Tabb, Gloucester; vice-president, Drs. J. W. D. Haynes, Mathews; Brown Evans, Saluda; H. D. Howe, Hampton; Rea Parker, Smithfield; and W. W. Kerns, Bloxom; secretary-treasurer, Dr. L. E. Stubbs, Newport News, Va.

Dr. James McLean Rogers,

After several years in Soonchun, Korea, has returned to this country and is located at his former home, Amelia, Va.

Dr. Stuart McGuire

Was elected a member of the membership committee of Stonewall Jackson Camp, Sons of Confederate Veterans, at a meeting in this city, early in April.

Large Children's Hospital at Alexandropol.

A children's hospital, said to be the largest in the world, has just been opened at Alexandropol, in the Southern Caucasus. It has been financed entirely by funds sent from America by the Near East Relief. At present, the hospital has 2,700 beds housed in forty wards, but, when fully completed, it will hold 6,000 beds.

The Medical Society of Northern Virginia and District of Columbia,

Which usually holds its semi-annual meeting about the middle of May, has postponed its date owing to the fact that many of its members will attend the meeting of the American Medical Association and connot get off for both. It will be held later in Warrenton, the date to be announced.

The Medical Society of Warrenton, Va.,

Has recently been organized, with Dr. Stephen Harnsberger as president; Dr. W. G. Trow, vice-president: and Dr. W. B. Carr, secretary-treasurer.

For Sale

General practice and office work in growing West Virginia city of 50,000. Cash collections for the last 2 years over $10,000 annually. Price $3,000 cash includes complete office equipment invoicing $1,800. Leaving on account of health. Available June 1st. Will introduce. Address "B," care this journal. (Adv.)

Location Wanted.

Protestant graduate of Medical College of Virginia in 1907, aged 40, who has been doing industrial work since graduation, wants a location in Virginia, in some good small town. Must be in a good community, with good schools and good roads. Will not object to doing some rural work on good roads and among a good class of people. Available about September 1st. Address this journal, No. 154. (Adv.)

Physician Wanted

To take charge of fine country practice in best agricultural section of Bedford county. New seven room house available with running water, bath room, etc. Garage, barn and twelve acres of good land. Splendid garden and fruit. Vacancy occasioned by recent death of physician in charge. Address Mrs. W. R. Arnold, Route 7, Bedford, Va. (Adv.)

Obituary

Dr. Alfred S. Rixey,

A highly esteemed physician and citizen of Culpeper, Va., died March 1, 1921, after an illness of several months with chronic nephritis. He was born in Culpeper, in 1861, and, after attending the University of Virginia and graduating in medicine from Jefferson Medical College, Philadelphia, he returned to Culpeper in 1882 and took over his father's practice. He became a member of the Medical Society of Virginia in 1887. For many years he had been local surgeon for both the Southern and Cheaspeake and Ohio Railways. He was unmarried and is survived by a brother.

Dr. William Hall Thomas

Died at his home at Steeles Tavern, Va., March 10, following a stroke of paralysis two days prior to that time. He had practiced his profession for thirty-eight years in the neighborhood in which he died and had endeared himself to the entire community. He was born at Steeles Tavern sixty-four years ago and was a graduate in medicine from Baltimore Medical College in 1889. He was prominently identified with the work of the Augusta County Medical Association and had for many years been a member of the Medical Society of Virginia. He is survived by his wife, four children and a large family connection.

Dr. William Turner Jordan,

Of Driver, Va., and for sixty-four years a practicing physician, died March 13, at the age of 86 years. He received his M. D. degree from New York University Medical College in 1859. He belonged to the old school of family physicians, was active in church work and a prominent Mason. His burial was conducted with Masonic honors. Four children survive him.

Dr. Charles Mason Thomas,

A graduate of Georgetown University Medical School in 1897, and for a number of years a practitioner at Healing Springs, Va., died at his home February 17, from pleurisy and empyema. He was fifty-four years of age. His wife survives him.

Dr. Thomas had an extensive practice in Bath and Alleghany counties and was characterized by great unselfishness and devotion to his patients. He was of sturdy frame and, until he contracted his last illness by exposure attendant upon his profession, he had been apparently in the best of health.

Fifty-third Annual Session, Norfolk, Va., October, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 2.
WHOLE NO. 839

RICHMOND, VA., MAY, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

LUNG ABSCESS: WITH REPORT OF CASES.*

By JOSEPH T. BUXTON, M. D., F. A. C S., Newport News, Va.
Surgeon-in-Charge, Elizabeth Buxton Hospital.

During the past few years many articles have appeared in various medical journals on the subject of lung abscess. Writing has probably been stimulated by the fact that a great many cases of lung abscess following operations upon the upper respiratory tract have been recognized. It was not until 1912, when Richardson reported three cases, that our attention was first called to this complication. Previous to this time not a single case is to be found in the literature.

Etiology.

Among the more frequent causes of lung abscess may be mentioned: Primary pulmonary infections such as pneumonia, pleurisy, grippe, scarlet fever and measles; trauma to chest wall or lung; presence of a foreign body in the lung such as may result from aspiration or from penetration of the chest wall as by bullets or schrapnel; extension of, or perforation from, a septic process outside of the lung as suppuration in the mediastinum or subdiaphragmatic abscess; septic infarct in connection with a pyemia where a thrombus is set free in the circulation as in septic puerperal thrombosis; rupture from, or extension of, infection in the pleural cavity; operations upon the upper respiratory tract when foreign bodies laden with infecting organisms reach the lung directly by aspiration (or by means of a septic thrombus reaching the lung through the circulation): abdominal operations, especially operations upon the stomach, gall-bladder and appendix.

Predisposing factors are age, sex, habits, previous illnesses, especially inflammatory conditions of the lungs, such as influenza or broncho-pneumonia.

Location of Abscess.

The majority of lung abscesses are situated in the right lung, but the involvement of the upper or lower lobes depends to some extent on the etiology of the abscess. In Hedblom's series, the abscesses were located in the right lung in 74.5 per cent, the right lower lobe being involved in about 50 per cent. of the cases. Lemon states that in the cases of abscess due to operations upon the upper respiratory tract, the upper lobes are most often affected, but if all cases are considered, three times as many abscesses are found in the lower lobes. In his series the right side was affected almost twice as often as the left. Also, in Kulb's series of forty-one cases, twenty-six were located on the right and fifteen on the left. Whittemore says "it is the general belief that the majority of abscesses are situated in the lower lobe, and this would seem reasonable to suppose in those cases due to aspiration, but this has been contrary to the findings in my series of cases. In twenty-two the abscess was in the upper lobe, and in nineteen it was in the lower. It is an important fact that most abscesses are situated in the periphery of the lung. Of thirty cases coming to autopsy in the Massachusetts General Hospital, the lesions were in the periphery in twenty-eight. Another important fact from a surgical point of view is that in the majority of cases the visceral and parietal pleurae are adherent near the site of the lesion. In thirty-five cases coming to autopsy at the Massachusetts General Hospital, the visceral and parietal pleurae were adherent in one form or another in thirty." Hedblom found that the pleurae were adherent in about fifty per cent of all cases.

*Read before Seaboard Medical Association, in Norfolk, Va., December 6, 1921.

Symptomatology.

The symptoms vary according to the duration of the illness. In the acute cases, a sudden expectoration of a dark brown, thick, foul-smelling sputum, during a coughing or vomiting spell, is considered as most characteristic of lung abscess. Usually, the patient will give a history of having had one or more sharp stabbing pains in the side affected a few days to a week preceding the sudden expectoration. Later on the abscess will probably have ruptured into a bronchus, after which time a chronic productive cough will be the most characteristic sign. If the bronchus or the opening into the bronchus s small, the expectoration may be periodic, due to alternate opening and closing of the bronchus. If the abscess has ruptured through the periphery of the lung into the pleural cavity, an empyema follows with the signs and symptoms common to this disease. Associated symptoms in any of these conditions are: fever (often intermittent), chills, night-sweats, weakness, pains in the chest, hemoptysis, and a rather rapid loss of weight. There is usually a leucocytosis of from 12,000 to 25,000 with a poly count of 80 to 90 per cent.

Diagnosis.

The diagnosis of lung abscess is not always an easy task. It must be differentiated especially from an encapsulated or interlobar empyema, localized bronchiectasis, tuberculosis and malignant disease that has undergone degeneration. (The differential diagnosis of gangrene of the lung and lung abscess is a pathological distinction and is of no importance from a therapeutic standpoint). The diagnosis rests largely upon a carefully taken history, thorough x-ray, and repeated sputum examinations. The physical examination is usually of but little value and often is entirely negative. Dullness to percussion is the most common physical finding.

The history should contain an accurate description of the onset of symptoms, as this information is very important in arriving at a definite conclusion. A history of previous inflammatory disease of the lungs or of an operation upon the upper respiratory passage is of decided value. In acute lung abscess the onset usually begins three to ten days after an operation upon the upper respiratory tract, with sudden pain in the chest, fever, cough and about 12 or 14 days after operation, a sudden expectoration of a considerable amount of foul-smelling pus. On the other hand, bronchiectasis is a chronic condition beginning with gradual onset and a slow increase of expectoration. Since spitting of blood is a sign common to most all lung conditions, it is of little value for differential diagnosis.

On standing, the sputum separates into three layers: mucus on top, saliva in the middle, and pus at the bottom. The most common organisms found are: streptococci, pneumococci, staphylococci, and influenza bacilli. It is very important to exclude tuberculosis and it is only by repeated sputum examinations that this may be accomplished. When only one kind of organism is found in the sputum, this points to an empyema or a lung abscess due to some foreign body.

The x-ray examination is the most important of all. It is very useful in the differential diagnosis and is absolutely necessary in determining the size and accurately localizing the process, a matter of much concern to the surgeon. A thorough study of the history with the x-ray and clinical findings will usually lead to a correct diagnosis. Holmes and Ruggles say "abscesses assume the form of irregular areas of increased density which are most marked at the center, fading out toward the periphery; when filled with fluid, they are indistinguishable from the general shadow about them, but the large ones become very evident when filled with air, particularly if they contain sufficient fluid to cause a fluid level. They are seen as round areas of greatly diminished density, and, if a fluid level is present, its surface shifts according to the position of the patient. * * * The localization is often disappointing to the surgeon because of the zone of pneumonic infiltration about them which magnifies the area of involvement. * * * Broncho-pneumonia may be differentiated by the fact that it gives a shadow of more uniform density and there is no cavity formation."

The physical examination is of little value in definitely localizing the abscess. The signs are most reliable when the lesion is situated near the surface. Before the abscess has ruptured into a bronchus and when the amount of pus is large, the signs are those of consolidation with diminished fremitus, respiratory sounds and voice transmission. Dullness to percussion is the most constant finding.

Anesthetic.

The question of the anesthetic is an important one and it is generally agreed that local anesthesia is the one of choice. It should always be used in the two-stage operations or in the one-stage operation where the visceral and parietal pleurae are adherent. In case the operation is to be completed in one sitting and the pleurae are not adherent, some form of positive pressure anesthesia may be used and is advised by some surgeons. It is well to have it on hand in any case that is to be done in one-stage as it is not until the incision is made down to the pleura that one can determine whether the visceral and parietal pleurae are adherent.

Treatment.

The essential treatment of pulmonary abscess is drainage, either natural or artificial. A certain number of abscesses will rupture into a bronchus and will be evacuated during coughing when the lung is compressed by the chest wall and diaphragm. The patients often discover that certain positions favor expectoration and unconsciously make use of gravity in emptying the cavity. Whittemore believes that not more than 10 out of 100 cases will recover spontaneously following rupture of abscess into a bronchus. In those cases in which the abscess is located near the hilus, pneumothorax seems to help considerably in the spontaneous recovery. It is certainly the safest, but, as Hedblom found that about 50 per cent of the cases had dense adhesions between the visceral and parietal pleurae, its use will be limited. In a certain number of cases, pneumothorax will be of value in controlling hemoptysis.

As to the time of operative treatment, each case must be decided upon its own merits. Early operation greatly reduces both the mortality and morbidity. In a series of 53 acute and 40 chronic post-pneumonic abscesses, Eisendrath found the operative mortality to be 11.3 per cent and 35 per cent respectively. In Hedblom's series of 30 acute and 17 chronic abscesses, the operative motrality was 33.3 per cent and 47 per cent respectively. Lord reports 6 deaths in 62 cases operated upon, a mortality of 9 per cent. In 1915 Whittemore reported 25 cases at the Massachusetts General Hospital operated upon with a mortality of 25 per cent, and in 1920 he reported 17 cases with a mortality of only 5.8 per cent, and of 31 personal cases, six died, a mortality of 16 per cent. The operative mortality will vary according to: the location of the abscess, its duration, the age and general physical condition of the patient, the type of infection, whether there are single or multiple abscesses, as the latter are always fatal, and upon the experience of the surgeon. The mortality will usually range between 15 per cent and 35 per cent. Surgery offers the best chance for cure in those cases in which the abscess is situated near the periphery of the lung and where the x-ray shows a circumscribed shadow with a central area of diminished density and a fluid level. The results of operative measures in the chronic cases are not so favorable as in the acute. Hedblom reports 66.6 per cent of the acute cases cured or improved, and only 41.1 per cent of the chronic cases cured or improved. Lord finds only 16 per cent of the chronic cases cured by operation. Bevan states that a great many of his cases drain for many months after operation. He believes that the patients are better off with permanent external drainage than when an attempt is made by the use of paste or of operative procedure to close the external fistula. Operative interference in the desperately sick will increase the mortality statistics but a few will recover and each patient is entitled to his chance.

The one or two-stage operation may be used according to which is best suited to the individual case. The surgeon should remember that the abscess is often found one or two ribs below where it is localized by the x-ray as the Roentgenogram is usually made on deep inspiration. It is important to have ample room for exploration and for drainage; therefore, a large incision should always be made and the necessary number of ribs should be resected, as wounds of the chest wall heal with marked rapidity. After the pleurae is exposed for an area at least the size of a silver dollar, an attempt is made to localize the abscess by using at a very small diameter aspirating needle. Palpation over an abscess situated near the periphery of the lung gives a firm hard sense of resistance. After the abscess is located, it may be opened at the same time; if the visceral and parietal pleurae are adherent or in case the patient is extremely ill and it is advisable to perform the operation at one sitting, the pleurae may be sutured together and the operation completed. There is no doubt but that the two-stage operation is the safest.

The visceral and parietal layers are brought together by cat-gut sutures introduced in the circumference of the area exposed and the wound packed with gauze under sufficient pressure to push the parietal layer inward about one-half inch. This promotes better adhesions. The second stage of the operation is done about 3 to 5 days later, at which time the abscess is again located with the aspirating needle and, with the needle in situ, by means of a cautery maintained at a dull red heat, an opening the size of the little finger is burned around the aspirating needle through the lung tissue down to the abscess. Upon reaching the abscess, the surgeon will see pus or will be met with a blast of foul smelling air. Whittemore prefers to incise the lung and open the abscess by boring a hole through the lung tissue with his finger, stating that by this method one is better able to determine when the abscess has been opened. To prevent post-operative hemorrhage, the cavity should be packed tightly with the gauze or a rubber tube may be inserted in the center of the opening and gauze packed around it, as this will afford drainage at the same time. The drainage tube should be removed in 24 to 48 hours to prevent pressure necrosis into a large blood vessel.

Complications.

The most frequent pre-operative complications are brain abscess, empyema, and a secondary infection of the lungs. Hemorrhage is the most common post-operative complication. Empyema is likely to follow any operation where the visceral and parietal pleurae are not sealed together either by adhesions or by sutures around the opening made in the lung tissue.

Report of Cases.

Case No. 1—Record No. 10188. W. F., age 15 years, entered the hospital on July 23rd, 1921. Seventeen months previously she had influenza which was complicated by pneumonia and lung abscess. Five months later an abscess of chest wall formed, ruptured, and has been draining ever since. Physical examination showed left chest almost immobile; and just to left of sternum in third intercostal space a sinus which exuded greenish pus when the patient coughed. Percussion note over left chest was flat, except for a small area at the apex, and breath and voice sounds were very distant. Heart was displaced to right. Roentgenogram on July 23rd showed left chest very dense, density extending from diaphragm to second rib anteriorly; shadow of breast very dense; heart displaced three inches to right;

Fig. No. 1. Case No. 1. X-ray made on day previous to operation.

unable to determine condition of ribs on left side because of great density.

This patient was extremely weak, and a rather poor surgical risk. On July 24th, under local anesthesia, the abscess of breast was opened and drained, and an incision was made three inches in length between and parallel to the eighth and ninth ribs. An incision one inch in length was made through the pleura, and the empyema cavity opened. A large quantity of pus was liberated and a piece of soft rubber tube was left in the wound to facilitate drainage.

Note.—After the operation, wound drained profusely for several days. The drainage became less rather rapidly and had practically ceased on the 10th day after operation. She left the hospital on August 6th with a normal temperature and but very slight drainage. The tube was removed from the chest one week later and wound readily healed. She has gained rapidly in weight and has had no signs or symptoms of a recurrence.

Case No. 2—Record No. 8677. W. F., age 49 years, entered the hospital September 26th, 1920, complaining of severe cough and fever.

Present illness began about seven weeks ago with headache and feeling badly. One week later a non-productive cough began and temperature, when taken, was found to be 104 degrees. About three weeks ago cough became productive, with abundant greenish, foul-

Fig. No. 2. Case No. 1. X-ray made seven (7) weeks after operation. Picture shows rather dense shadows but patient has been free from symptoms for about three weeks. Fluoroscopic examination two months later showed chest almost clear.

smelling, purulent sputum. Has had daily fever with sweats and slight pain in right axilla after severe coughing.

Physical examination showed breath to be very foul, the odor pervading the entire room. In right axilla, from the inferior angle of the scapula posteriorly to base of lung, the percussion note is dull, almost flat; tactile fremitus is decreased over this area; breath sounds are distant and accompanied by fine moist rales, more numerous in the back but extending to superior angle of scapula in interscapular region. Vocal fremitus and whispered voice are diminished over the area of dullness.

Laboratory examination showed a total of 39,200 white blood cells with 92 per cent polys. Examination of sputum failed to reveal any tubercle bacilli. Fluid aspirated on September 30. showed a pure streptococcic infection.

X-ray examination on September 28th showed marked infiltration of the hilus of right lung with marked peribronchial thickening; an area of dense infiltration at the base, extending from the hilus at the level of the 5th rib, anteriorly, and the 7th rib, posteriorly, downward and outward almost to the periphery and to the diaphragm below. Near the hilus a fairly dense shadow, three inches in length, and one-fourth inch in width, is situated vertically, extending from the level of the 6th rib anteriorly and the 8th rib posteriorly.

Note.—While in the hospital this patient ran a very septic temperature and coughed up a large amount of very offensive and foul-smelling pus. She refused operation and left the hospital on October 4th, for Mount Sinai Hospital, New York, where she died on October 7th, 1920. Autopsy showed an empyema of the right side, which contained about 700 c.c. of thick, greenish, foul-smelling fluid. Almost the entire right lower lobe was gangrenous and there were numerous small abscesses in the rest of the lung, varying from pin-point size to one-half inch in diameter. The bronchi were not abnormally dilated. In the right lower lobe, about one-half inch from the spinal column and immediately beneath the pleura, was found a longitudinal cavity about five inches in length and three-eighths inch in width, which contained a slate pencil about 3 inches in length and one-eighth inch in diameter. The cavity in which the slate pencil was found had no communication with any bronchus. Microscopic examination of a section made from this cavity showed that this was a bronchus that had become closed off from the rest of the bronchial system.*

Case No. 3.—Record No. 8871. Col. F., age 20 years, operated on for ruptured gangrenous appendix with peritonitis, on November 1, 1920. Wound was drained with four cigarette drains. Temperature never returned to normal. Four days after operation, began complaining of dyspnea and pain in lower right chest. Temperature, pulse and respiration remained elevated, the temperature ranging around 101 degrees to 102 degrees, at times reaching 104 degrees.

X-ray examination on November 23rd showed area of dense infiltration extending from the hilus outward almost to the periphery and from the 3rd rib anteriorly to the diaphragm. Heart displaced to left.

*Note.—Since this paper was read on December 6th, 1921, this case has also been reported by Dr. Louis G. Kaemper, in the American Journal of Surgery, January, 1922, page 8.

Chest was explored on November 2.th but no fluid was obtained.

On December 15th, patient coughed up about 500 c.c. of foul-smelling pus. Owing to her general systemic infection and toxic condition, it was thought unwise to subject her to further operative procedures. She died a few days later. No autopsy.

Case No. 4.— Record No. 8950, W. M., age 17 years, entered the hospital on November 15th, 1920, complaining of a pain in right chest and a severe cough Nine months previously he had his tonsils and adenoids removed under ether anesthesia. Two weeks later he began having pain in chest at base of right lung. He was in bed for two weeks without improvement and then taken to a hospital where he was operated on. An intercostal incision was made and, according to patient's statements, one quart of pus was removed. He left the hospital after nine weeks with pus still discharging from wound. After five weeks at home, the wound closed but in a short time the symptoms recurred. Since then and previous to entrance to Elizabeth Buxton Hospital, he has been operated upon twice, rib resections being done each time. He has shown no improvement and has had four hemorrhages from lungs recently.

Upon entrance to the Buxton Hospital, he was thin, pale and very poorly nourished, weighing only 73 pounds. He was coughing up a large quantity of greenish, foul-smelling pus sputum and was draining a small amount of the same kind of material from a small wound in right chest. There was extreme dullness over whole base of right lung, extending up to spine of scapula behind. Blood examination showed 19,800 leucocytes with 82 per cent polys. Sputum showed a mixed infection, with streptococci and pneumococci predominating. The x-ray examination of right lung showed hilus dense and infiltrated; apex clear; some peribronchial thickening of upper lobe; middle and lower lobes densely infiltrated, the infiltration extending from the second rib, anteriorly, and the fifth rib, posteriorly, downward to the diaphragm; lower part of lung retracted; pneumothorax at the base.

Note—His condition was so grave, it was thought best not to subject the patient to further operative procedure until his general condition could be improved. A hemostat was introduced into wound and withdrawn while opened to increase size of sinus. Upon removing the hemostat the patient was seized with a fit of coughing and a large amount of necrotic gangrenous tissue and pus was forced out through the wound. The wound was kept open with a tube three-eighths inch in diameter. The wound drained freely and after one week his temperature returned to normal. He improved rapidly and was discharged from the hospital on March 22, 1921, at which time he was able to take long walks from the hospital and had gained about twenty pounds in weight. Although he still has a foul-smelling pustular discharge from wound, he weighs 117 pounds and is apparently in the best of health, except for the draining sinus of chest. The patient was re-operated upon January 10th, 1922, under local anaesthesia. A horse-shoe-shaped incision eight inches in length, with base upward, was made on lateral surface of right chest. The skin flap was dissected up and the muscle done likewise. About four inches of the fifth, sixth,

Fig. No. 3. Case No. 5. X-ray made about three weeks after tonsillectomy shows cavity at base of right lung.

seventh and eighth ribs were resected. The sinus leading into the lung was then dissected out along with a portion of thickened pleura. Openings in three bronchi were located and sutured with number one chromic cat-gut. A portion of the muscle was removed and the

skin flap placed into the wound. A guaze sponge saturated with Dakin's Solution was packed into the wound to hold skin flap in place. Drainage was free for several days but at one month after operation there is but a slight amount of mucus discharge through about five or six bronchial openings into the main wound, which is healing gradually.

Case No. 5.—Record No. 9890. W. M., age 29, entered hospital May 27th, 1921. Tonsils and adenoids were removed under ether anesthesia. Returned home on May 28th where he remained for one week, feeling well except for sore throat. Eleven days after operation, as he stepped off of a street car, he was seized with a sudden sharp pain in his back at the base of right lung. Pain grew worse and was very aggravating the following night and day. Three days later, while vomiting, he brought up about four ounces of very foul-smelling pus. He continued to bring up a considerable quantity of a greenish yellow foul-smelling sputum during the next two weeks. X-ray examination made on June 20, 1921, showed a large cavity surrounded by a dense wall located just external to the hilus, extending from third to fifth rib anteriorly. His cough subsided and after four weeks he was practically well except for the fact that he was very weak. He had lost 37 pounds in weight. X-ray examination on September 12, 1921, showed complete healing of the abscess.

Fig. No. 4. Case No. 5. X-ray made ten weeks later shows lung clear. Patient recovered spontaneously without operation.

Case No. 6—Record No. 9713. W. F., age 31 years, entered the hospital on April 22nd, complaining of pain in left chest and a cough. Fourteen days previously her tonsils and adenoids were removed under ether anesthesia. Four days later she began having some pain in left lower chest and eight days after operation she was seized with a very sharp pain in left chest which caused her to scream. The pain continued about the same for about eighteen hours; on April 20th, while coughing, patient states that about one pint of very offensive and foul-smelling black material poured out of her mouth. After entrance to the hospital her expectoration became periodic.

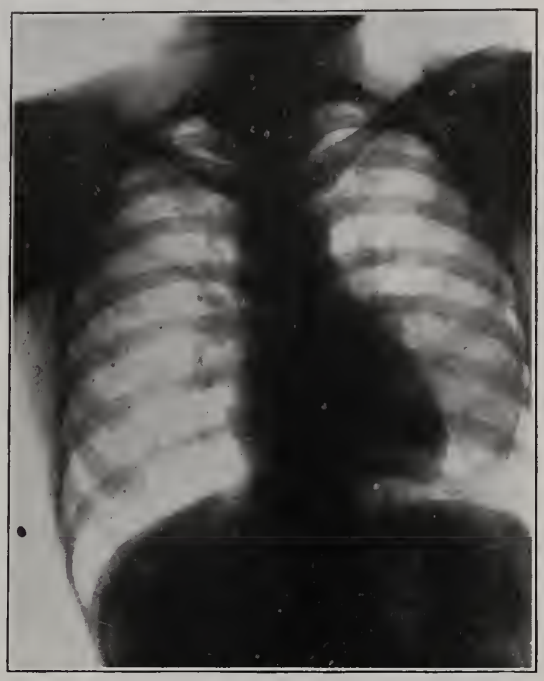


Fig. No. 5. Case No. 6. X-ray examination made fifteen days after tonsillectomy is negative.

Physical examination at first was practically negative but later showed slight dullness in eighth interspace about three inches from spine on the left side; a few crepitant rales were heard in this area.

X-ray examination on April 23rd was negative. Another examination on May 6th showed dense infiltration extending from third rib anteriorly, and seventh rib posteriorly, to the diaphragm but not to the periphery of the lung.

Examination of sputum showed many pus cells, pneumococci, streptococci and influenza bacilli but no tubercle bacilli.

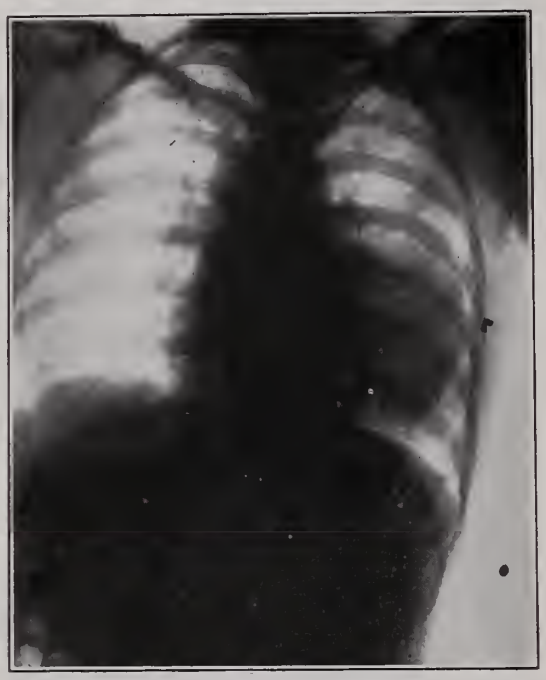


Fig. No. 6. Case No. 6. X-ray made four weeks after tonsillectomy and on day previous to operation shows dense infiltration base of left lung.

On May 7th she was operated on under local anesthesia. A horse-shoe-shaped incision was made in posterior axillary line from sixth to ninth rib; seventh and eighth ribs were exposed for a distance of three inches and two inches of each resected. The abscess cavity was then located by means of a small exploring needle; the pleurae, showing little tendency to adhere, were sutured together with No. 1 chromic cat-gut; an opening, one-half inch in diameter, was made down to the abscess cavity by means of a cautery maintained at dull red heat; very little pus was found but the odor was distinctive; one cigarette drain was introduced into the opening and the wound partially closed.

Note—The drainage tube was removed two days after operation, at which time a large quantity of pus poured from the chest cavity. The wound drained freely and, one week after operation, her temperature had returned to normal. The wound had healed when she was discharged on June 3rd.*

*She was re-admitted to the hospital ten days later because of headache and pain in left chest. Wound explored by a probe showed a few drops of very offensive pus. A small piece of rubber dam was inserted into the wound and allowed to remain there for two weeks after any odor could be detected. She has had no signs or symptoms of a recurrence.

Summary of Cases.

As to etiology, three cases followed the removal of tonsils and adenoids under ether anesthesia, one followed prolonged retention

Fig. No. 7. Case No. 6. X-ray made one month after operation shows lung almost clear. Another examination made two months later showed lung completely clear.

of a foreign body, one followed acute general peritonitis due to ruptured gangrenous appendix, and one followed influenza complicated by pneumonia.

Of three cases not operated upon, one recovered spontaneously after rupture into a bronchus in about four or five weeks and two died. Of three cases operated upon, two are cured and one has a chronic external fistula.

The onset was sudden with expectoration of foul-smelling sputum in three cases, beginning about 14 days after tonsillectomy, and was gradual in two others. The sputum had a foul odor in all cases, the odor was very marked in those cases following tonsillectomy.

Abscess was located in left inferior lobe in two; right lower in three, and right lower and middle lobes in one.

In abscess due to prolonged retention of foreign body, a growth of pure streptococcus was obtained from fluid aspirated from abscess. In all others there was a mixed infection with pneumococci, streptococci and influenza bacilli predominating. No tubercle bacilli were found.

There was a bronchial fistula in five cases

and in the case following influenza there was an empyema which had perforated anterior chest wall and had been draining for several months.

Leucocytosis was present in all cases with elevation in number of polys.

In no case did the x-ray show a fluid level.

REFERENCES.

1. Hedblom: Pulmonary Suppuration. Collected Papers of Mayo Clinic, 1919.
2. Shambaugh: Problems Relating to Faucial Tonsils. Surgical Clinics of Chicago, December 1918.
3. Lemon: Abscess of the Lung—Mayo Volume, 1920.
4. Bevan: Abscess of Lung—An Important Sequel to Tonsillectomy—Surgical Clinics of Chicago, October 1918.
5. Fisher and Cohen: Pulmonary Abscess in Adults Following Tonsillectomy under General Anesthesia. J. A. M. A., October 22, 1921.
6. Bevan: Chronic Lung Abscess with Fistula—Treatment by Excision—Surgical Clinics of Chicago, December 1919.
7. Clendenning: Case of Lung Abscess after Tonsillectomy, J. A. M. A., April 3, 1920.
8. Whittemore: Lung Abscess. Surgical Clinics of N. A., June 1921.
9. Rausohoff, Joseph and J. Louis: Lung Abscess—American System of Surgery, Volume VIII, page 19.
10. Bevan: Abscess of the Lung. Surgical Clinics of Chicago, April 1919.
11. Brewer: Abscess of the Lung. Keen's Surgery, Volume III, page 537.
12. Whittemore: Lung Abscess from a Practical Surgical Point of View. Surg. Gyn. and Obst., August 1920, page 144
13. Holmes and Ruggles: Roentgen Interpretation —page 141.

REMARKS ABOUT HEAD AND OTHER PAINS DUE TO NASAL IRRITATION.

By JOS. A. WHITE, M. A., M. D., Richmond, Va.

I must apologize for speaking tonight of such a threadbare subject as pain in the head, front, top or back, also pain in the back of the neck, and in the shoulder, and pain in the back, varying in location from the atlas to the lumbar region. These pains are subacute or chronic, intermitting at times, but mostly more or less constant, slight sometimes, quite severe at others. At times nasal troubles are responsible for these manifestations. Strange to relate, the text-books on the nose and throat lay little stress on reflex pains outside the eyeache or frontal headache, and make no mention of pains such as I refer to. The etiology of headache, common as the trouble is, is one of the most difficult problems physicians have to deal with; its causes are so numerous and obscure that any light thrown upon the subject should be helpful.

Some of these painful phenomena are common symptoms of ocular disturbances, either refractive or muscular, especially the pains about the head, and often promptly disappear with relief of the ocular defect, although we are occasionally quite disappointed to find no such good fortune after the most painstaking correction of the optical error or muscular imbalance, mathematically demonstrated to be accurate.

There is nothing new about this. We all have had this experience. Such cases travel the rounds, going to one doctor after another, because the glasses or other work, done by those previously consulted, have failed to help them. The new man, even when he is practically satisfied that the previous work is about right, either tells the patient that he can't do any better, or makes some slight change in the glasses, hoping that he may make a center shot instead of just grazing the bull's eye, and always with the same unfortunate result.

The ocular trouble being satisfactorily eliminated, we look naturally to other parts of the head for the cause, the nasal chambers and the accessory sinuses.

But often before the nose is taken into consideration, many of these cases have been through various modes of treatment. The continual drain on the nervous system of more or less constant discomfort brings about other phenomena, such as mild hysteria, imsomnia, dyspepsia, functional cardiac symptoms, etc., which sends them far afield for relief, and only a happy inspiration of some one of the physicians consulted may lead them to the desired haven. Volumes have been written about the subject of nasal reflexes, and at one time it became almost a fad, like other medical and surgical crazes, which sooner or later were thrown into the scrap-heap, the good in most of them being eventually overlooked in the reaction following the extravagant claims for their value.

Looking at the question, however, from a sane scientific viewpoint, we must admit the fact that pathological conditons of the nasal spaces, and their adnexa, are often responsible for reflex pains about the head and other parts of the body, as well as for other nervous phenomena, and should always be considered by the internist as a possible cause for various

morbid phenomena of obscure or uncertain origin. Still, great care has to be exercised in laying the blame on the nose to avoid doing operative work in such cases, because, even with marked abnormalities in the nose, it may still not be responsible for the existing annoyances.

So few noses are really free from anatomical defects that we would be kept busy if we were to attempt their correction in only a small percentage of cases. In an examination of some thousands of adult skulls, marked septal deviation was found in seventy-eight per cent., and anatomists state that this is almost invariably acquired after seven years of age, as children under that age usually have a straight septum. It is because of this great percentage of crooked septums in adults that the submucous resection is performed so often without any real scientific basis for the operation. I have examined hundreds of cases with crooked septums, who never had the slightest symptoms referable to the nose, except an occasional cold in the head. Since 1906, when I did my first submucous operation, after the introduction of the swivel knife of Ballinger in 1905, when everybody was doing them in the first wave of enthusiasm about the operation, I have operated upon a number of them, but only on the more pronounced septal deformities, with the usual cosmetic effect of a straight septum, and sometimes with no improvement of the nasal breathing, if I may believe my patients, as they claimed to be no better off than before. Of course when the nasal drainage was improved there was bound to be a physiological bettering, but sometimes with hypertrophied middle turbinates present, I did not do this much.

As Loeb remarks, "Deviation of the septum does not warrant operative procedure unless it causes some major deleterious symptom, such as marked nasal obstruction to breathing or drainage, sometimes with aural catarrh, tinnitus, etc., because a very marked deviation may produce no objectionable subjective symptom."

Spurs in front, or midway back, can be removed submucously without a complete submucous operation. But far back, over the vomer, the saw does the work better, as it is not necessary to be so careful of the mucosa in the back, as drying of the surface matters little in this locality, whilst it is to be deprecated in front. Spurs on the septum, especially if they impinge on the opposite soft tissues, are a prolific source of nasal reflexes, sometimes pain in different localities, and occasionally in the mastoid with tinnitus, simulating ear trouble without any defect of hearing.

The mental attitude of people with reflex troubles should always be taken into consideration, although all of them are not in the least to be classified as neurotic. We all know how a new treatment or a different operation affects some neurotic individuals so favorably that they apparently get rid of the trouble, be it pain or otherwise complained of, but it sooner or later recurs and they keep going the rounds —getting temporary relief or benefit from each change. This, however, cannot be said of results that have lasted for months or years in the cases herein given.

Headache and eyeache are frequent in the neurotic cases which have a form of vasomotor rhinitis, one or the other side being blocked at times, although in these subjects fatigue, worry, etc., seem to play their part in the manifestations.

Where the soft parts only are involved in such cases, we should be very careful about operative procedures, although this is one of the most satisfactory fields for the submucous operation if there is marked twisting of the septum.

Otherwise, if the inferior turbinate is swollen, as it often is, the linear cauterization with the galvanic cautery, the whole length of the turbinate under view with the palate retractor, will be an effectual method of treatment. I recommended this in my article in Burnett's system of Diseases of the Ear, Throat and Nose in 1893, and Sluder more recently has advised the same treatment without giving any credit to others who had previously done this, besides re-inventing the palate retractor I gave to the profession in 1888.

The inferior turbinate should never be removed although the posterior end, when much enlarged, may be amputated. On the contrary, resection of the middle turbinate is called for whenever (quotation again from Loeb's Nasal Surgery) "the turbinate interferes with the drainage of the adjacent accessory sinuses, when chronic suppuration or polypi are present, and when we have reflex pains, sneezing, epiphora, or hyperaesthetic nasal conditions, dependent upon enlargement and pressure of the middle turbinate." St. Clair Thompson, one of our most eminent authorities, says that no ill effects follow the removal of the middle

turbinate but that the inferior turbinate should never be removed.

It is all important for free breathing and free drainage that there should be ample space between the middle turbinate and the cushion of the septum. The septum is formed behind by the vomer below, and the perpendicular plate of the ethmoid above, and in front, by the so-called triangular cartilage, a vertical plate of cartilage set in the angle of these two bones.

The middle turbinate is like the ethmoid plate, part of the ethmoid labyrinth, attached externally, and curved inward and downward towards the plate without touching it, except in pathological conditions. Often as a result of repeated swellings from cold or otherwise, it comes in contact so often that abrasions take place, resulting in adhesions that become osseous in character.

This brings about various nasal reflexes, so-called, especially in neurotic subjects, and among them, manifestations of pain in different localities. Deflections of the septum help in the production of these adhesions and are often regarded as the sole cause and operated on by a submucous resection without result, except a straightening of the septum which is flaccid from the removal of the cartilage and bone (which is never reproduced), and can only be beneficial when there are no osseous adhesions high up. This is especially the case when such adhesions exist, as they often do, on both sides. When there is mere contact without actual bony union, and particularly if on one side only, it is beneficial, but when the hypertrophy of the turbinates is bilateral, neither the drainage of the nose nor the breathing is improved. This is a self-evident fact if you wll keep the anatomy of the parts in mind.

Hence, I claim that such pathological conditions as I have mentioned are as much a contraindication for the submucous operation as those you are all familiar with, viz, syphilis, tuberculosis. chronic troubles of the heart, kidneys, etc.

In these cases obstruction of free drainage or free respiration can be obviated by a partial resection of the middle turbinate, and in some by a practically complete resection without any deleterious effect and often with very marked benefit. This same treatment is especially applicable to cases who are subject to repeated attacks of cold, and I have numbers of them where a partial resection of the middle turbinate, by improving the drainage and the respiration, has resulted in doing away entirely with this tendency to colds in the head.

The submucous operation is preferably called for in three special conditions besides the one mentioned above: First, when the septum curves over to one or the other side so as to obstruct the nostril to the detriment of respiration or drainage; second, when it interferes with catheterization in the treatment of chronic aural catarrh; third, when a marked "S" shaped septum causes more or less obstruction on both sides. Even where imperatively called for, it is sometimes necessary to amputate the middle turbinate or break up osseous adhesions afterwards.

In 1899 I presented a paper on headache, ocular and nasal, before the Tri-State Association; several years later another before the Medical Society of Virginia, and reported a number of cases cured by this simple process instead of an elaborate operation. In other papers since, I have called attention to similar cases that came under my observation. This is no fad of mine, as I am not alone in this point of view, for I appreciate and know the value of the submucous operation in suitable cases and do it when necessary; but do know that it is done much too often and in many cases that are not suitable for it, where a simple operation would give the desired result.

I could present to you a long list of cases like the few to which I am calling your attention, to exemplify my remarks, but these few added to the many I have already recorded are enough for the purpose. Several of my cases had had a submucous done by previous attendants without any result.

Case No. 1. Miss D., stenographer, 25, October 1920, has had pain in her head and right shoulder: has hyperopic astigmatism which was properly corrected by another specialist, but with no relief of the pain. Nose, no pathological deflection of the septum, but marked ballooning of the submucosa on the left side which was much reduced by cocaine and adrenalin, left middle turbinate enlarged and adherent to septum. Removal of the turbinate gave permanent relief. I saw this case recently and she has had no return.

Case No. 2. W. G. N., city, age 21 (collegian), pain in neck and back, eyes refracted without result, septum deflected to the right, turbinate of the same side hypertrophied with resulting marked pressure. Partial resection of

the turbinate, instead of a submucous, was done, and the result was perfect relief (less traumatism, less loss of time and less expense).

Case No. 3, December 1920, Miss M. L., 21, constant pain in the head not relieved by correction of the refractive error. No pathological deflection of the septum, pressure and adhesions of the turbinate on the right. Local treatment for some months and the glasses gave no permanent relief. Did a right turbinectomy in October, since then has had no pain.

Case No. 4. January 1921, Mrs. E. W. H., 40, pain in back of head and neck. Refracted her which gave some relief, and family physician treated her for sometime without avail. Slight deflection of the septum, and adhesions between the septum and the turbinate on the right side. Amputation of the turbinate after separating the adhesions gave almost immediate relief.

Case No. 5. Mrs. J. S. E., West Va., age 28, almost constant headache. Came to see me in February, 1921 Eyes refracted and no relief, no pathological deflection of the septum, some bulging on the left, but the right side is apparently straight, pressure of turbinates on both sides but the left is worse. Left turbinectomy gave relief from headache.

Case No. 6. January 1921, Mrs. T. S. W., age 35, pain in neck and shouder for several years, had various treatments and no result. Has slanting hyperopic astigmatism, but correction did not relieve, septum twisted to left and adhesions between it and the turbinate. Was in doubt about a submucous or a left turbinectomy, but did the turbinectomy with entire relief from this long continued chronic pain and the resulting nervous symptoms. As her husband said, I made a new woman of her. She was subject to repeated colds, has had none since the operation.

Case No. 7. March 1921, Mrs. D., city, age, 45, constant pain in head and back of neck. Has been refracted without relief, also a turbinectomy done with the same result; very nervous and excitable. Septum deflected to the right so as to almost close the nostril, but has fair air space. The turbinectomy on the left side had left the posterior portion in contact with the septum, which when touched with the probe produced pain in the back of head and neck. Removal of this gave permanent relief and modified her nervousness.

Case No. 8. June 1921, Mrs. E. H., 22, constant headache. Refraction correction gave no relief; no pathological deflection of the septum; septum and left turbinate adherent. Amputation of the turbinate gave relief from headache.

Case No. 9. July 1921, R. B. F., 28, North Carolina, constant headache, repeated colds, chronic pharyngitis, mouth breather, septum slightly deflected to the right (not pathological), both upper meati tightly blocked by dense hypertrophy of the middle turbinates. Amputated both with prompt relief, headache gone, doesn't take cold, breathes well, and throat much improved.

Case No. 10. October 1921, Miss B. M., 34, headache, eyeache and pain in back of neck. Hyperopic astigmatism, refracted by a colleague with perfect correction, but no relief of the pain. Septum not pathologically deflected, but hypertrophy of the middle turbinate on the right with adhesions, turbinectomy gave practically immediate relief.

Case No. 11. Miss S., 31, constant headache, refracted correctly without avail (by some one else), septum not markedly deflected, but on the right side a bony projection from the vomer which brought it in contact with the lower part of a thickened turbinate with slight adhesions. Turbinectomy gave practical relief of headache; was done three months ago and only one or two slight headaches since. This case is not well as there is more or less tendency to granulations since the operation.

Case No. 12. W. W. L., 25, pain in right shoulder and neck for twelve months, none in head, right middle turbinate blocked upper meatus and pressed upon the septum. Its removal gave entire relief from the pain.

I have simply reported these cases as examples of results from this treatment, but have not had time since I was called on to present this paper to analyze them closely with appropriate remarks in each case, but hope to elaborate this subject later. I have excluded pain from the various sinus troubles and none of these cases had any sinus complications. I wish, however, to call attention to the value of the nasopharyngoscope in examining the nose, both before and after operation, and it is astonishing how very little departure from an almost normal picture is to be observed after a carefully performed turbinectomy.

200 *East Franklin Street.*

AN ELECTROTHERAPEUTIC MISCONCEPTION.
THE SINUSOIDAL CURRENT.*

By CHARLES A. PFENDER, M. D., Washington, D. C.
Professor of Roentgenology and Electro-therapeutics, Georgetown University Medical School.

Of late years there has crept into the minds of men and women engaged in the practice of medicine a distinct antithetical concept towards any reference, direct or remote, to electrotherapeutic or electro-surgical measures. This conflict has been engendered either surreptitiously or unconsciously and has led to the establishment, or at least to the partial development, of a train of thought that is at variance with the true fundamental principles of electrotherapeusis, and which does not square with the accepted teachings of the masters in this important medical specialty. It would have served the purposes of altruistic precepts far better had this concept found an early grave or better still had it escaped prenatael ovulation.

"Sweet are the uses of adversity;
Which, like the toad, ugly and venomous,
Wears yet a precious jewel in his head:
And this our life exempt from public haunt
Finds tongues in trees, books in the running brooks,
Sermons in stones and good in everything,
I would not change it."

The sound electrotherapeutic application of the healing art has ever been based on careful experimental research, thoughtfully accurate clinical observation guided by profound reasoning of superior intellectuality and directed by a cosmic cogency that brooked no interference and annihilated all atavistic tendencies. It predicated achievements to higher levels, surmounted chaotic unbelief and hurled unbalanced reason to ultimate fugitation. Premises such as these caused Guericke, Faraday, Galvani, our immortal Franklin, d'Arsonval, Tesla, Oudin, Roentgen, Coolidge and many, many others of equal fame to establish a firm foundation on which to build a superstructure for achievements that will reverberate throughout eternity and ever fan the flame of scientific normalcy.

The subtle undercurrent of electrotherapeutic nihilism which frequently finds its way in the pilastered corridors of the halls of learning is proof positive of a lack of understanding, or a cynic manifestation of superiority—by no means charitable—and even an undisguised contempt for truly sincere endeavors and conscientious efforts, sometimes finds a habitat. But fortunately, the more altrustic scientific student lends no ear to meditations of supinely genuflectic trepidation nor does he stoop to generalize in flatulent non-essentials when vital issues congregate around his service constellation. On the other hand, we have with us always those prophetic souls whose astigmatic myopism fails to pierce the darts of hyper-cerebratory obliquity. Slipping on the brink of indecision they inadvertently incline to follow the line of least resistance and in the final count are numbered with those beyond recall. For these poor misguided individuals we experience a deep sense of pity, and far be it from us to cast even an allegorical stone on the career of their choosing, for it is generously accepted that they know not what they do, and hence they are automatically relieved of all responsibility. It is not so, however, with the student who basks in the egotistic cerulean halo of a sphere of scintillating radiance of self-preempted super-eminence. Such super-mental altitudes are not oft achieved and rarer still are they associated with a true breadth of vision necessary to bridge the gap "of might have been" to achievments truly great and wonderful. But even to these we cheerfully pay tribute and we feel honored to be seated at their feet; they at least add something tangible and constructive to our scheme of electrotherapeutic and electrosurgic revelry. But pray deliver us from the microcephalic type whose chief stock in trade is that of self-sufficiency upheld solely by an inflated sense of superiority and a degree of assaninity bounded by a measure of conceit that would effect his complete submergence in his own debris, were it not for the saving grace of true fraternalism. Of such an individual it may be truly said that

"Our indiscretion sometimes serves us well,"

and were it not for the fact that

"There's a divinity that shapes our ends,
Rough-hew them how we will"

we would many times be strongly tempted to withhold much necessary succor,—but

"give me leave
To speak my mind, and I will through and through
Cleanse the foul body of the infected world
If they will patiently receive my medicine."

*Read before the Medical Society of the District of Columbia, January 18, 1922.

However, all the milk of human kindness has not been drained from our electro-therapeutic cocoanut, nor is there any evidence that dire afflictions have warped our disposition, and I verily say unto you that the thought presented for your delectation has been inspired to a large extent by the somewhat prejudicial conduct of hyperenthusiastic optimism manifested by the electrotherapeutist himself.

For ages past the medical practioners and surgeons have been taught to hew a course most commendable and conducive to conservatism and this is singularly applicable to the surgeon. 'Tis true, this may have had a tendency to change his once broad system of mental relay to a road-bed of narrower guage, perhaps fully as great or even more efficient than before; but it is not unlikely that this may have deprived him of the added spurs, switches, turns and double tracks so necessary for wholesome expansion in various lines of endeavor. Is it so very surprising therefore to find that he promptly girded his loins and did go out to battle with what appeared to be a most formidable, but to his mind and possibility of conception, a more or less illiterate enemy? By no means. Promptly the battle rages and is fought by the rules of "might makes right," and the survivor, to his surprise, experiences an anaphylatic reaction that doubles him up in an angio-neurotic fit of edematous proportions, which is gently and firmly moulded by the subtle alchemy of time into a respect most wholesome for his former adversary. And what is the result? Miscegenetic concourse—social or otherwise—tends to merge the two extremes into a homogenous entity whose fruition forms the bulwark of a new and broader era of medicine enthused by youthful progeny and tempered by the maturer wisdom of generations past, both striving for the same goal, and both sharing the rewards of sacrifice and duty towards our fellow man.

The wonders of the universe enthrall us by their grandeur. The harnessing of untold possibilities by human agencies seem puerile when we compare it with the thunder's roll and the lightning's flash. Both were accepted as positive proof of divinity and in olden times lightning was universally believed to be a manifestation of divine wrath. In those days the brambles of superstition rent all cogent thought and heaven's dome was divided into sections of good or of evil omen, and sometimes held fatal to all undertakings. The planets coursed, centuries passed, and empires crumbled in the dust and still the superstitious thought that electricity was the voice of Jehovah prevailed, until old Ben Franklin—rest his soul—got out his little kite and key and set to right our trend of thought. How often have I meditated on what might have happened to old Ben if he had used a copper wire instead of a cotton string and sat down on a barbed wire fence instead of a sour apple tree waiting for something to happen. History as it is writ would have been robbed of much enchantment and at least one of the precious classic gems of literary spice, contained in the archives of the War Department, would have been lost to us forever.

Probably the first electro-therapeutist known was Scribonius Largus, a physician, who lived during the time of Tiberius (A. D. 14-37), and who made use of the Raja torpedo-fish for rheumatism. The Grecian philosopher, Thales of Miletus (born 641 B. C.), was probably the discoverer of electricity. The ancient Phoenecians found floating upon the waters of the Baltic sea a beautiful transparent gem. This the Greeks called "electron." Thales discovered that this gem, known as amber, acquired by rubbing, certain properties and developed a certain force—electricity.

Two thousand years elapsed before any great study of the properties of amber or electron was made. It remained for William Gilbert (1540-1602), a pioneer in the study of magnetism, and well known as the Court physician of Queen Elizabeth, to astonish all Europe by his experiments and from his labors sprang the science of electricity.

The first electric machine was devised by Otto von Guericke of Magdeburg, in 1630. It consisted of a globe of sulphur on an axle to be turned by the hand while a cloth was applied to the globe. The friction of the cloth upon the sulphur brought forth sharp sparks of electricity; it was the precurser of the now well known static machine. Barely fifty years ago, the electrical knowledge of the entire world was confined to a few static sparks, a magnet, a voltaic pole and the faradic coil, while today the electric current, har-

nessed by human agencies in the form of light, heat and power has produced a revolution in the arts and sciences, in the channels of commerce and in the application of diagnostic and therapeutic medicine.

It has been most aptly stated (Grover) that "To medical men generally, electricity is a mystery and its effects only psychic. While few writers of books on neurology recognize the beneficial effects of electricity, the recommendations they make for its application engender a feeling of pity for their understanding of modern methods. Whenever the word electricity is used without specifying the modality to be used, a total lack of understanding is as apparent as in the statement 'drugs may be tried' for this or that condition without specifying what particular drug should be prescribed."

"No field in medicine offers greater encouragement for study and application than does that of electrotherapy. Electricity in its many modalities has greater power in restoring functional conditions and arresting organic changes than all the drugs mentioned in our pharmacopeia. Electricity is by no means a cure-all, but the wide-range of its applicability, its vitalizing and stimulating force to every cell of the human body make it a resourceful agent in medicine."

"The results of therapeutic value from *any* electric modality are in direct proportion to the skill of the operator. The harm resulting from the unskilled operation of these modalities emphasizes the necessity of a course of instruction in the use of electrotherapeutic apparatus."

"While we are becoming comfortably seated in the chair of scientific electrotherapy we have not yet adopted a uniform technic of application. Each operator, as he becomes more proficient, works out a technic satisfactory to himself, but there are certain basic principles that guide us all, and the better understanding we possess of those principles and a careful working out of the problems which confront us, the sooner will we be able to adopt a universal method of application."

"John Wesley was the first person to write in the English language a treatise on electricity. I quote from his concluding remarks, as follows: 'Before I conclude, I would beg one thing from the gentlemen of the faculty and all who desire health and freedom from pain, either for themselves or their neighbors. It is that they would none of them condemn they know not what; that they would hear the cause before they pronounce sentence; that they would not pronounce peremptorily against electricity while they know little or nothing about it. Rather let every candid man take a little pains to understand the question before he determines it. Let him for two or three weeks (at least) try it himself in the above named disorders. And then his own senses will show him whether or not it is a mere plaything or the noblest medicine yet known to the world.'

"Are not these words as true today as when uttered by that great preacher one hundred and sixty years ago? His apparatus consisted of a primitive form of static machine and the Leyden jar. He would insulate the patient, charge him with static electricity and draw sparks from his body. His method greatly influenced metabolism and he secured results without having the slightest idea of how or why this was so.

"James Graham was probably the first electricity quack. He flourished in England about one hundred and forty years ago, and from that time to the present the world has suffered from him and his ilk. Graham's chief specialty was the treatment of sterility, and its cure was effected by sleeping in the celestial bed at the modest fee of fifty pounds."

———

Static electricity had been used as a remedial agent for nearly fifty years before galvanism and faradism were discovered. These new discoveries in the electrotherapeutic field bid for a time to displace static electricity, largely due to the difficulty of construction of suitable machines, but "it is a fact that no other high potential apparatus has yet been produced which will induce the physical effects of the tissue pulsation with resulting tissue drainage," and static electricity will always maintain the eminence it has achieved in medicine.

Again did progress halt for still another half a century. Boulders of ignorance, obstructive bulwarks of misdirected energy and rampant quackery sought in vain to pierce the mental fog of vague conception. After years of hopeless plodding and aimless indiscretion —at a time when the status of electrical endeavor seemed bereft to every vestige of the

proverbial silver lining of hope—there burst upon the world a veritable shower of scintillating radiance of rejuvenated activity that bid fair to revolutionize and far surpass the loftiest visionary fields of the philosophic dreamer of modern thought.

Thoughts long dormant were cast into the smoldering crucible of experimental research and there emerged a product of superior excellence which crystallized in the discovery (1885-1890) of the now well known high frequency currents by d'Arsonval, Tesla, Oudin, Marconi and others.

The intensive study of light phenomena followed closely in its wake, and in 1895 the discovery of the X-ray by Roentgen inaugurated a new era of therapeutic cosmos that even today astounds the most credulous conservative. Until the discovery of the X-ray, electrotherapy was groping in almost stygian darkness. Empiricism meandered through labyrinthean seas uncharted and only too often led to serious doubtful speculations that hurled the less courageous into abysmal electrotherapeutic despondency. But when finally the concrete evidences of perceptive physical phenomena appeared, this specialty emerged from its former nascent state of unrequited longing to the well authenticated scientific basis which it has so recently achieved and promises to maintain.

———

In the discussion of any electrotherapeutic measure, it is difficult to escape the inclusion of various modalities which are closely allied to any single subject under consideration. The discovery of the galvanic current is closely knit with the well recognized and associated properties of the faradic current and both are today playing an active part in the re-education and regeneration of such muscles as are wasted, and will incite a reaction to stimulation. It has been found, however, that another modality, which is rapidly becoming more generally employed, combines in many instances the dual properties of galvanism and faradism with decided advantages over both. I refer to what is known as the sinusoidal current.

The Latin word "sinus" means a bend, or curve, and the word "sine" is derived therefrom. A sinusoid is "The curve of sines, in which the abscissas are proportional to an angle, and the ordinates to its sine."

In speaking of a sinusoidal current, therefore, we mean a current which starts at one polarity at zero, gradually increases to its limit of strength, and then gradually returns again to zero and then from the opposite polarity at zero increases in the same manner, thus producing an even sine wave.

This sinusoidal current is galvanic in character, but the constant change of polarity prevents the electrolytic effect of the galvanic current, each positive phase being replaced by a negative phase. This current is less painful and more efficient in many classes of cases where faradism was usually employed. Moreover, the muscular contractions produced by this sine wave closely resemble physiological movements, and, in addition, one is enabled to use it in a rapid or in a slow sine or when superimposed it is known as surging. In cases where the employment of either a faradic or galvanic current causes so much pain as to interdict their satisfactory employment, the sinusoidal current will promptly demonstrate its superiority by permitting the administration of more current with subsequent contractions of involuntary muscles without pain.

The sinusoidal current is useful in eliciting reflexes; it is by some considered the current of choice in inducing analgesic effects, both superficial or deep. It will induce muscular contraction without the necessity of placing the electrode over motor points and is exceedingly useful in restoring weakened back muscles. It develops the weakened muscles without overstimulating the normal ones and is by some considered more efficient in the treatment of scoliosis than a plaster jacket could ever hope to be. It is particularly efficacious in stiffened joints , infantile paralysis, cervicobrachial neuritis. The asthenic neuro-circulatory conditions based on fatigue and toxic absorption in the blood are frequently removed by the application of the sinusoidal current with one electrode over the seventh cervical vertebra the other over the sacrum.

Perhaps the foregoing enumeration of a few of these methods for the treatment of certain definitely known diseases which are particularly amenable to the employment of the sine wave current will be pardoned when we recognize that broad experience has emphasized its true value in so many instances, whenever it was properly employed. In this connection I ask you to accept as authentic the statement that today we have no better or more effective

modality for the treatment of the prolapsus of the abdominal viscera, intestinal stasis and the like, than the sinusoidal current.

A comprehensive discussion of the subject is out of the question here, nor is it necessary, as most of you are more or less thoroughly conversant with these conditions of gastro-intestinal pathology. Grover says "When the digestive function becomes better known we will know more about intestinal stasis. When knowledge is absent the children of ignorance and superstition play havoc with the home. The quack and patent medicine vendor come along with nature's remedy tablets, liver pills, effervescing salts galore; the masseur with his squeeze; the osteopath and chiropractor with their adjustments; the homeopath with his dilutions; the regular with his calomel, jalap, epsom salts, castor oil, cascara, senna and paraffin oil; the proctologist with his colonic flushings; the surgeon with his appendectomies, gastroenterostomies, releasing kinks and suspension of ptosed viscera.

"One dietitian recommends a diet which leaves but little residue and another recommends a diet which yields a rich residue. Health-talks preach on the advantages of a strictly vegetarian diet, again on excess fruit, and still again on buttermilk and exercise. The hydropath advises enormous quantities of water and the patient gets fat and still is constipated. Others advise a four-mile hike and ten somersaults before breakfast. The gymnast hangs by his heels and rolls a cannon ball over the abdomen and still dreams of a water closet.

"The poor suffering human after being treated and mal-treated by some or all of these methods still prays for a natural evacuation. Man is the only animal who fails to answer the phone when nature calls. He is educated to thwart nature after his first year. He may be what is called a law-abiding citizen and may obey some of the laws of health, but compliance with the notices from his sewer department is usually neglected.

"The mechanism of man is particularly adapted to care for itself during strikes and brain storms. It will stand more punishment with less complaint than any other machine.

"It has been stated before that nearly all diseases arise from deranged metabolism, and intestinal stasis is responsible for a large proportion of the derangement. Intestinal stasis is followed by toxemias. Toxemia is a causative factor in hypertension. Hypertension is followed by cardiorenal disease, arteriosclerosis and cerebral accidents. In an effort to clear the intestinal canal of toxic products great quantities of blood are sent to the scene, the digestive organs are flooded and splanchnic neurasthenia is one of the results. Muscular efforts to clear the food tube force the abdominal contents downward producing a condition known as enteroptosis. This condition is usually accompanied with adhesions and appendicitis. A little physiological plumbing is preferable to cutting the system out. Operations are frequently followed by more adhesions and more intestinal stasis. The patient becomes a hopeless neurasthenic and drifts from one physician to another, to the osteopath, the chiropractor, and finally, settles down to physic, petroleum and prayer.

"The electrotherapist has no corner on knowledge of the digestive function, but he believes that the central nervous system controls all movements of the intestines through the vagus and splanchnic nerves, and that an enfeebled nervous system is the prime factor in all motor disturbances of the gastro-intestinal tract; consequently, his treatment is directed to the restoration of the nervous function. The better the understanding of the controlling factors of the nervous system, the better will be the results of treatment. When the sympathetic is stimulated the secretory and motor activities of the gastro-intestinal tract are inhibited."

We have today no measure that will contract and dilate the muscular fibres of the intestines in a manner simulating natural movements as effectively as the sinusoidal current. It is easily and readily applied, causes no pain, and promises speedy results.

By placing one electrode over the second and third lumbar vertebrae and the other over the space at the left of the ensiform cartilage, with a current strength anywhere from 50 to 150 milliamperes, using a sine wave that reaches its height by about 15 alternations per minute and applied about 15 minutes, increased gastric tone is noted at once. In intestinal stasis one electrode should be placed over the lumbar region, the other at different parts over the abdomen. In spastic constipation, the selected sites are the lower dorsal vertebrae and different areas over the colon. Abrams prefers to produce this result by applying one

electrode over the sacrum the other over the eleventh dorsal. The selection of fifteen alternations per minute is based on the fact that this is considered about the normal rate of physiological intestinal contraction.

This brief resume of the effects of the sinusoidal current readily indicates the employment of this modality in many conditions of the gastro-enteric division of our Interior Department. I feel, however, that I have trespassed heavily upon your time and patience. Permit me to state in conclusion that the successful treatment of disease is approached only through physiological observations, intelligent clinical investigations supplemented by accurate pathological, chemical and physical laboratory notes, including comprehensive x-ray studies.

1206 *Eighteenth Street, Northwest.*

SILENT STONES.*

By W. LOWNDES PEPLE, M. D., F. A. C. S., Richmond, Va.

The object of this rather brief paper is to put before you one or two rather unique cases with comments, suggestions, and deductions that may lead somewhat off of the beaten track.

We are prone to run away with theories; and when we get a really logical one, we often stretch it to the breaking point.

Not many years ago some very able investigators discovered bacteria in the center of gall-stones. Hence, all gall-stones were caused by a primary cholecystitis. Now, if this were true of the gall-bladder, where it is so difficult for the patient to have an infection without symptoms, was it not truer of the kidney, where infections are known to exist and persist without symptoms? Presto! the thing was done.

But there are many who are not quite ready to accept this very plausible theory in toto, that all stones are preceded by and due to an infection.

If we turn the thing round, however, it will logically explain many cases and satisfy a great number of dull, hard-headed, unimaginative practical people. These hold (and I am among them) that stones, however they got there, are often the exciting cause of serious infections. It is true of the gall-bladder, truer of the kidney, and truest of the appendix.

Does anybody know of a worse kind of appendicitis than the one caused by an enterolith necrosing through? An infection may have caused the enterolith to form, but its bursting through is often the first demonstrable evidence of the existing infection.

But whether stones in the gall-bladder and in the kidney are caused by infections, or whether, from disorders of metabolism, solids in the form of crystals drop out of a sterile solution to form a sterile stone, we leave for the scientists and debaters.

There is, however, in this connection, a very practical fact that is removed beyond the field of discussion; that is, that stones often lie silent in these organs for long periods of time, and when detected sometimes present very perplexing problems.

Take the gall-bladder, for instance. Say we have done a hysterectomy in which there were complications. Our best judgment tells us that the patient has had enough. An over-zealous assistant lifts up an appendix that can not be denied. A few more precious minutes are gone. Then, to make the record complete, you reach up and find a gall-bladder full of stones. There you are! It is no text-book situation. It is a reality.

You do not like to subject your patient to a second operation. The patient does not like it any better than you do. If anything, she likes it less. What are you going to do? One of three things: (1) Take a chance. (2) Wait a week and do a second operation. (3) Tell her they are there, and let them wait until they give trouble.

Let's consider these alternatives in detail; there is far more time to do it now than then.

(1) Take a chance. Any mere operator can decide such a matter in a jiffy, but a surgeon may be very deeply concerned as to whether this is the wisest and best course to pursue in the circumstances. If he does decide to do the gall-bladder operation, it would be well for him to have in mind the operation of cholecystotomy, so well described by Dr. A. Murat Willis in a recent paper read before the Southern Surgical Association.

Provided the gall-bladder is not diseased (and there are many such that contain stones), to open it, take out the stones, close it, and drop it back seems a quick, clean, and practical procedure. It seems far less hazardous than cholecystectomy or cholecystostomy, and

*Read at a meeting of the Richmond Academy of Medicine and Surgery, April 11, 1922.

it leaves the upper abdomen nearer normal than does any other procedure.

Dr. Willis does not claim originality for this operation, but he has certainly re-focussed attention upon it. I have never performed it, but it appeals to me very strongly.

(2) Wait a week and do a second operaion. This is a conservative thing. It is not easy. I have done it, and have no cause to regret it, but I did not want to do it.

(3) Wait for trouble. Remember, these are silent stones. Their arrival was symptomless, and their presence, for the time being, is innocuous. It is only the fear that they may do harm that makes us want to remove them. I have seen stones so left go for years without giving trouble. Doubtless many have died of old age or intercurrent troubles without knowing they were there. If ten per cent. of us have them, as statisticians claim, lots of them must be silent; for, as the Irish would put it, "We never know we have them until we are dead." In view of all we can learn, this third alternative of watchful waiting is not as primitive or ultra-conservative as one, at first blush, would think.

Now for stones in the kidney. In the course of examination for other conditions, the x-ray is revealing many silent stones in the kidney and ureter.

We used to think that a stone in the kidney necessarily gave rise to severe attacks of kidney colic. We were later taught that the silent area of the kidney was its cortex, and a stone there gave rise to no pain. It was the stone that projected into the pelvis, or that lay in the pelvis or ureter, that gave pain.

Stones in any part of the kidney from cortex to pelvis, and even in the ureter itself, may be silent and symptomless for long periods of time; or, on the other hand, in any of these locations they may give rise to the most intolerable pain. One of the worst cases of kidney colic I ever saw was due to a stone no bigger than a grain of wheat, away out in the cortex. Its removal gave complete relief.

In illustrating the foregoing remarks, I wish briefly to report three cases.

Case 1. E. W. 68, white, male, tobacconist, gave a history of frequent copious urination over a period of six or seven years. Five years ago, he had a suprapubic cystotomy done for an enlarged prostate. This proved not to be the case, but his wound took seven weeks to heal. For several years he has had some pain from time to time in the right lumbar region.

I saw him a little over a year ago. This lumbar pain had been very severe for two weeks, and was accompanied by chills and sweats and fever. Examination revealed a

Case I. Showing small triangular stone in the right kidney and large dendritic calculus in the left.

large lumbar abscess which was opened under cocaine. It was pure colon infection, and probably came from an old post-caecal appendix. The wound healed quickly, and the pain and discomfort rapidly disappeared.

He was a great water drinker, and passed great quantities of pale, alkaline urine. All efforts to render it acid were unavailing. It was, otherwise, about normal.

An x-ray picture revealed a small phosphatic stone in the right kidney and a large dendritic calculus in the left. Here was a practical surgical problem; a man 69 years old, with a silent stone in each kidney. He has just recovered from a severe illness due to a colon infection in his back. His urine is alkaline and nothing will keep it acid. A suprapubic incision drained seven weeks, probably from this very cause. He has never had kidney colic. If his stones are removed, will the wounds heal? If they do heal, will not the stones soon re-form in the presence of an obstinately alkaline urine?

I asked myself these questions, and decided on a course of watchful waiting. More than a year has passed. He is back at his work. He still urinates frequently and copiously and

alkalinely. But he is back at his work and doing very satisfactorily. He has had no attacks of kidney colic.

Case 2. Mr. T., white, male, age 40, manufacturer, came under my care in 1913. He had, a short time before, returned from South

Case II. Showing small stone in the left and very large calculus in the left.

Africa, where he had been engaged in business for the preceding five or six years. He was in a general run-down condition, but there had never been pronounced kidney colic. He had noticed for some time a rather heavy deposit of a whitish sand in his urine, which first drew attention to his kidneys His urine was alkaline, and the deposit was phosphatic in nature. The urine contained a little pus, but was otherwise normal. X-ray revealed a small stone in the right kidney and a very large one in the left.

The right one was removed first. It lay in the kidney substance at the corticomedullary line, and was taken out through a trans-cortical incison. It weighed two drachms.

The second one was removed ten days later. It weighed one and one-eighth ounces and lay in the pelvis, which it greatly distended. This was removed by slitting the pelvis and shelling it out. It was technically much easier than the first. Both stones were phosphatic, and there were many scales and much sand in the left pelvis.

The patient made a good recovery and improved greatly in his general health. I saw him several months later. He had improved greatly but was still passing some sand, and had to take phosphoric acid continuously to maintain a faint acidity of his urine. I have not seen him for a number of years. His is the type of case in which we may expect recurrence.

Case 3. R. S. P., white, male, age 30, merchant, a native of Russia; fat, healthy and well-fed, states that he has never had a serious illness, and in this he is borne out by his mother. He has never had cystitis or any

Case II. Actual size of stones in inches.

trouble with his urinary tract. He has never had kidney colic or anything resembling it.

Several months ago he applied for life insurance and was turned down because there was a small amount of pus in his urine. Following this up, a kidney-function test was done and an x-ray plate was made. These examinations revealed the following data:

Right kidney: Ureteral os considerably congested; urine contains abundant pus and blood; function, two per cent. for thirty minutes.

Left kidney: Ureteral os normal; urine normal, function, twenty per cent. for thirty minutes.

There was a greater amount of water secreted by the right than by the left kidney—a

Case III. Showing large stony mass in right kidney.

rather curious anomaly when one sees from the specimen how very little kidney-substance was left in this organ.

Case III. Gross specimen cut longitudinally.

The x-ray revealed a large, dendritic, stony mass occupying an area almost as large as a normal kidney. There was no stone in the left kidney.

Here is a typical case of silent stone in the kidney. From childhood to manhood there was never an illness that could be associated with this condition, either as cause or effect. The man was enjoying perfect health. The discovery of this great mass of stones was purely accidental.

The kidney, on exposure, proved to be so completely filled with the stony mass and multiple cysts that a nephrectomy had to be done. The operation presented no unusual difficulties, and the patient made an uneventful recovery.

Before showing the few lantern slides that

Case III. X-ray of specimen after removal, showing extent of stony mass and cystic condition of what is left of kidney.

illustrate the cases just reported, I wish to emphasize one or two conclusions.

First, that stones may lie silent and symptomless for long periods of time in the gall-bladder and even in the common duct.

That their presence does not necessarily mean that the gall-bladder or ducts are diseased, or that the contained bile is infected.

That such stones, when found in the course of other abdominal operations, not infrequently furnish a problem that calls for the soundest surgical judgment, at times requiring the courage to do nothing, which is the greatest of all courage, in some circumstances. It may be likened to lying still under fire.

Secondly, that stones may lie silent and symptomless in the kidney over long periods of time, and that we should be on the alert to follow up trivial clues in order to detect them.

That, inasmuch as certain of them, notably the phosphatic type, tend to recur, we should be very certain that our patient will be better off for an operation, before executing it.

That we should be especially on guard in the case of phosphatic stones in the presence of a persistently alkaline urine.

That the internist and biochemist may never be able to dissolve stones that have formed, but that it is their duty to tell us how, when they are removed, they may be prevented from re-forming.

1209 *West Franklin Street.*

GALL BLADDER DISEASE.*

By WILLIAM EARL CLARK, M. D.,
and
MATTHEW W. PERRY, M. D.,
Washington, D. C.

Before considering diseases of the gall-bladder we have thought it advisable to mention briefly some of the newer conceptions concerning its anatomy and physiology. In this connection the recognition of the intimate contact of the blood stream to the hepatic cells is important. At places not even the usual thin endothelial layer seems to intervene, but the cell is directly bathed with blood. In parts of the liver at least, no intermediary lymph flow, such as is present in practically all other tissues, is employed. This largely makes possible the ability of the liver to excrete particulate matter in the form of bacteria or the particles of dyes intravenously injected. In sections one may at times see a red blood cell engulfed in an hepatic cell, many of the latter undoubtedly having phagocytic power. In typhoid fever the bile swarms with bacteria presumably thus picked out of the blood stream. This activity in eliminating bacteria from the blood has been thought responsible for many of the chronic inflammations of the biliary passages and bladder, it being assumed that in the passage out many become lodged in the mucusa and are retained. Of late it has been more often assumed, however, that a preliminary hepatitis is produced, an actual lodgement of organisms in the hepatic tissues, and that this secondarily sets up gall-bladder inflammation, as will be taken up more in detail later.

Comparative studies are most instructive in forming an opinion as to whether or not the gall bladder in man serves a definite and useful purpose, or whether, like the appendix, it is a worthless structure. In general, it may be said that all carnivora have gall-bladders. Those animals which do not are all herbivora. Many herbivora, however, do have them. The cow, for example, does have, while the horse does not. But in all animals in which it is absent the process of digestion is more or less a continuous one and a continuous flow of bile might seem necessary, while in all those animals in which digestion is an intermittent process gall-bladders are present. It seems to have been shown quite definitely, furthermore, that the sphincter of Oddi is a much stronger and better developed muscle than in those animals with gall-bladders. Mann of the Mayo Clinic[1] has shown that in animals with gall-bladders, under light ether anæsthesia, the sphincter would stand on the average one hundred millimeters of water pressure, while in those without gall-bladders, under similar conditions, only thirty millimeters were withstood. This would suggest a definite relation between the development of the sphincter and the presence of a receptacle for storage, and that this receptacle represents a part of a well worked out and elaborate physiological mechanism. For it must be borne in mind that the flow of bile is a continuous one, representing as it does an excretion as well as a secretion. As a secretion, the flow is increased during digestion. As an excretion, representing the elimination of waste products, especially those from the destruction of worn out red blood cells, a constant flow is implied. Bile plays a most important role in digestion and absorption. Some mechanism for the storage of that part produced in the interdigestive period would seem a necessary and wise provision of nature. Otherwise, just so much of a valuable digestive fluid would be lost. On the whole the mass of evidence seems to point to the gall-bladder as a physiological structure of a definite value, when not diseased, and such seems to be the opinion now generally held.

The small capacity of the gall-bladder has probably been the chief reason for the under estimation of its value. It seems to be able to store such a small part of the total liver secretion. Analyses, however, show that the bile pigment of the gall bladder bile is in a far more concentrated form than in liver bile. Sodium taurocholate, for example, is sixteen times more concentrated in the former. Recently Rous and McMaster, working at the

*Read before the Clinico-Pathological Society of Washington, D. C. 1921.

Rockefeller Institute, have shown by direct measurements in dogs that the gall-bladder concentrates liver bile from six to ten times, largely by absorption of water. It thus becomes evident that the gall-bladder is perfectly able to store the secretion of the interdigestive period.

The mode of emptying of the gall-bladder is a complicated problem and one on which workers are not agreed. It has been commonly assumed that as material from the stomach enters the duodenum a reflex nervous mechanism is called into play which causes contraction of the musculature of the gall-bladder with consequent emptying. This idea has been enlarged by Melzer who believes that in this reflex mechanism there is coincident contra-innervation of the sphincter of Oddi with relaxation of the latter. And it is on the basis of this theory of contra-innervation that Lyon's ideas are founded, magnesium sulphate being supposed when applied to the duodenal mucosa to set into action this reflex mechanism. Many investigators feel, however, that in man the gall-bladder musculature is far too scanty to effect an emptying in this way. Microscopic sections show, indeed, very little muscle. As observed at operations, any wave of contraction seen in the gall-bladder is a very feeble and ineffective one. Still, the colicky pains seen in duct obstruction, suggest rather violent contractions and do not fit in with these observations. There are investigators who believe that emptying occurs largely through variations in intra-abdominal pressure. Sweet of the University of Pennsylvania[3] is of this opinion. We have recently tried a number of cases to find that this is the case. With the duodenal tube in place, we have had the patients strain as at stool and have applied pressure by manipulation and by binders and it has been possible in most cases to obtain a rather scanty flow of bile. But this has not been the black bile which one would expect from the gall-bladder but ordinary golden yellow bile. We are still working on the problem and plan to report more in detail concerning it at a later date. Many observers of the Lyon method feel that the dark bile which one obtains by it represents more or less of an incomplete and passive emptying of the gall-bladder, incident to the general flow from the liver and relaxation of the sphincter of Oddi. Recent work suggests[4] that the dark bile represents a concentrated liver bile resulting from hepatic stimulation by absorbed magnesium ion, or liver bile in which the bile salts have become oxidized in the passage out.[5] It seems at present that one cannot form an opinion as to the mode of emptying of the gall-bladder. The whole represents a problem which ought to be settled by some research laboratory with well controlled experiments. This should put an end to the many clinical ideas on the subject now appearing.

When one considers that next to affections of the appendix diseases of the gall bladder come as the second most frequent cause of intra-abdominal disease, it seems worth while to collect as much useful clinical data as possible to further interest and aid in the recognition of these upper right quadrant conditions.

Until the last few years there was little in the text books to aid in making an early diagnosis of gall-bladder disease. The profession was familiar mostly with late manifestations, like gall-stone colic, blocking of the common duct with subsequent jaundice, or the more aggressive infections attended with chills, fever, and distended palpable gall-bladder.

Deaver, McCarthy and Jackson and others have for sometime called attention to the relationship between the pathology of the stomach, duodenum, appendix, gall-bladder and pancreas. They have urged physicians and surgeons to study their cases with this relationship in mind. They feel that from their study of a vast amount of pathological material, almost always with frank disease of one of these organs, there are associated changes in one or another of the other organs mentioned. They feel that inflammatory changes in one serve as a focus from which infections spread to the others. Thus, chronic appendiceal inflammation is thought to unload infectious material into the portal stream which sets up an hepatitis and cholecystitis. Lymphatics from the latter drain into the nodes at the head of the pancreas and thus produce changes in the latter. The connection with peptic ulcer is not so easily traceable; but certainly it is most common to find associated at operation, chronic inflammatory changes in the appendix, gall-bladder and head of the pancreas.

Rosenow called attention to the fact that organism of the cocci group have a special, almost selected, tendency to infect the gall-bladder. Infections of the gall-bladder seem to act quite like infections in any of the other

hollow abdominal viscera. They seem to come by way of the blood stream, often setting up an hepatitis as well as a cholecystitis. The frequency of appendiceal disease as a forerunner of gall-bladder and liver disease has long been stressed. McCarthy was able to produce like changes in dogs by injection of pathologic bacteria into the appendiceal vein[6]. Clinically, they have found that sections of liver removed with the gall-bladder show in almost every instance an hepatitis as well as a cholecystitis. Even in sections removed at points quite distant from the gall-bladder an hepatitis could be demonstrated, indicating that such had not been produced by contiguity to an infected gall-bladder. Some experiments of Mann are of interest in a study of the pathology of the gall-bladder. In the course of experiments on dogs with Dakin's solution, he found an apparently chemical inflammation of the gall-bladder which gave him an interesting lead. He made further experiments with the gall-bladder and liver as the chief points of interest. By the intravenous injection of eight to ten c.c. of Dakin's solution, he found that there occurred a prompt inflammatory change in the gall-bladder and to a less extent in the liver. This inflammation in the gall-bladder came about so promptly and occurred with the cystic duct ligated, so that he felt that the irritant reached the gall-bladder through the blood stream. A further interesting observation in this work was the fact that the fundus of the gall-bladder was the place where changes were seen to take place first. This corresponds with the idea that infections in the gall-bladder are carried by the blood stream and not as a rule through the bile. In the early cases of cholecystitis what seems to be the starting point of the infection is in the fundus of the gall-bladder.

In Smithies' analyses of one thousand cases of gall-bladder disease, he stresses the relation of bacteriemias, septicemias, or chronic lymphatic infection to gall-bladder disease. Typhoid fever naturally led the list. Tonsillitis, scarlet fever, pneumonia, infected teeth, and chronic rheumatism had been other important infections. He seems to rather stress early infections occurring in childhood.

Barker[7] speaks of patients who seem to have a family tendency to migraine attacks, diabetes, arteriosclerosis, and obesity, as being especially liable to gall-bladder disease.

Attacks of headache, dizziness, languor, loss of appetite, nausea and vomiting come under the syndrome called by the patient "bilious attacks." These attacks often seem to be similar to attacks of migraine. There has been a tendency of late to interpret these attacks as transient functional derangements of the liver. That is, the pendulum has swung back to much the same view clinicians held years ago. Many such attacks seem to be of gastro-intestinal origin mainly and, although there is no way of proving that the liver is even involved in a functional way, it does seem probable that with an overloaded, deranged intestine, there might readily be enough toxic material in the portal circulation to derange liver function for a time at least. Repeated attacks of functional derangement may, after a time, produce structural derangement in the liver and biliary passages. The most striking feature in the etiology of gall-bladder disease, however, seems to be the fact that in a very large per cent of cases a history of appendicitis is obtained, or at operation definite pathology is found in the appendix necessitating its removal. In going over our cases this seems to be borne out. We also have another pet theory which, while difficult or impossible to prove, is such a strong physical impression that it seems worth mentioning, namely, that there is a relationship between chronic stasis, irritation of the colon from frequent use of cathartics until organic changes are produced, and appendicitis.

Pregnancy or childbirth seems to definitely predispose to gall-bladder disease due, it is thought, to the extra cholesterin content of the blood and stasis through pressure. At the Mayo Clinic the proportion of women to men is given as about seventy-seven to twenty-three and about ninety per cent of the women have borne children and had had their first attack of cholecystitis in close relation to their pregnancies.

As stated previously, the infection seems to be blood borne and the early changes are probably in the mucosa, first at the fundus, and, depending on the virulence of the infection, the inflammation may spread slowly or rapidly. The early changes are more or less congestion or slight infiltration but probably not enough to be detected by palpation or even inspection if the abdomen were open. Smithies states that unless there has occurred excessive mucous secretion and the bile is so thickened that it is forced from the gall ducts

with difficulty such gall-bladders are frequently at operation pronounced normal and remain untouched. He feels that this type of gall-bladder is seemingly the foundation type for the majority of gall-bladder ailments, that it is the actively infected type and the most frequent forerunner of the purulent, necrotic, gangrenous and perforative complications. In these cases the gall-bladder is distended, as a rule, with old bile with great increase of mucus and cholesterin. Clumps of leukocytes with exfoliated epithelium and micro-organisms are frequent. If the swelling about the cystic duct obstructs the orifice the distention may be quite marked. In about fifty per cent. of the cases sand or stones are found. It seems that stones may be formed in a relatively short time instead of taking years to form as has been thought in the past. The stones seem to form about these clumps of exfoliated cells or leukocytes and not infrequently micro-organisms are found in the centers. The lymphatic glands about the cystic duct are swollen and in cases of recurrent attacks of acute cholecystitis the glands may be so hard and indurated as to make the operator suspect malignancy. The finding of these enlarged glands is sufficient indication for puncture of the gall-bladder and examination of its contents. Usually, infected altered bile, excess of leukocytes and debris are found. Increase in the vascularity and bleeding always suggests an infected gall-bladder. In some cases the walls of the gall-bladder are infiltrated and thickened and cultures from the wall are positive for streptococci and staphylococci and colon bacilli while the cultures of the gall itself are relatively sterile.

Malignancy of the gall-bladder occurs in two forms; one projecting into the cavity as a fungating growth, the other infiltrating its walls. In another stage it may appear as a localized plaque in the walls of the gall-bladder. Most often these growths occur at the fundus, though it is not unusual to have them occur at the entrance of the cystic duct, causing obstruction and dilatation of the gall-bladder. Long continued irritation, as by stones, seems to be an important factor in the production of malignant disease.

In the clinical study of patients with cholecystitis it would be a wonderful advance if in suspected cases we could drain the contents of the gall-bladder into a relatively sterile duodenum and aspirate for investigation microscopically, macroscopically and chemically. Vincent Lyon[8] sincerely believes that by his method of introducing the duodenal tube and injecting the sulphate of magnesia he can in almost every instance relax the sphincter of Oddi and produce reflex contraction in the gall-bladder with expulsion of the contents of the latter into the duodenum. He claims that this gall-bladder or "B" bile can be differentiated from duct bile, or the later flow of bile from the liver. He claims that he has time after time obtained pathological bile full of clumps of desquamative epithelium, leukocytes, sand, and bacteria identical with that of bile later removed from the gall-bladder when the patient comes to operation. He feels that in many instances he can determine the capacity of the gall-bladder from the amount of "B" bile obtained. At the Boston meeting of the A. M. A., both the papers read and the discussion showed the great interest that had been aroused and how widely clinicians all over the country were trying out the Melzer-Lyon method of biliary drainage. It seemed as though it had not only aroused interest in this method but on the whole problem of liver and bile passage disease. Smithies was perhaps the most enthusiastic supporter of Lyon, reporting seven hundred cases in which it had been done. Others had doubts if Lyon was correct in his interpretation of the phenomenon. Einhorn was of the opinion that the dark "B" bile was the result of stimulation of the liver cells by the salts and that it was a concentrated liver bile mixed with duct and perhaps gall-bladder bile. He doubted if the magnesium salts produced gall-bladder contraction. Dr. Willy Myer and he had watched the gall-bladder when the abdomen was open in patients who, previous to operation, had swallowed the duodenal tube. The magnesium salts were injected in the usual way and, as mentioned before, the gall-bladder did not seem to contract. Others beside Einhorn doubted if Lyon could be certain in his deductions of all the differential steps of the procedure. Lyon absolutely stood his ground claiming that in cases with the gall-bladder removed dark concentrated "B" bile was not obtained. Occasionally, in cases where the operation had taken place months previously, a darker more concentrated bile might be obtained but Lyon claims that this came from a dilatation of the larger bile ducts that had occurred in a compensatory way after the gall-bladder had been removed.

He felt it was definite evidence that in human beings the gall-bladder had a definite use, namely, to store and conserve bile during the inter-digestive period. He restated the close similarity of what he could obtain from the duodenum and the contents of the gall-bladder at operation; that is, the color, viscosity and mucous content, the finding of cholesterin crystals, leukocytes and organisms which at culture were identical to both.

When the smoke of battle had cleared, I had the impression that the majority of members felt that the darker "B" bile might come in part from the gall-bladder but that they doubted if it could be so definitely segregated as Lyon claimed. They seemed to feel that the magnesium salts did stimulate a marked increase of biliary flow and that the gall-bladder contents were mixed with this general flow. There seemed to be considerable doubt about a reflex muscular contraction of the gall-bladder which could bring down at one stage distinct gall-bladder bile.

The case reported recently[4] of a patient with a duodenal fistula rather throws evidence on Einhorn's side but their observations did not seem to cause Lyon to retract from the stand he had taken. More recently[5], by observations at operation with the tube in place, it has been shown that a dark bile, like "B" bile, may be obtained without any emptying of the gall-bladder whatever. We have been using biliary drainage according to the technique of Lyon for some months past. We feel that in some cases it is a dfinite aid in making a diagnosis, more especially in duct disease, but we do not feel that it can be relied on more than other laboratory methods. If the history and physical examinations cause us to suspect the gall bladder or bile passages and at several different times we get a concentrated bile with clumps of debris, excess of leukocytes, *et cetera*, it is evidence in favor of liver or bile duct disease. The finding of numerous pus cells in cases of catarrhal jaundice is indisputable. We have not been convinced that one can rely on it sufficiently to send a patient to operation unless all the other clinical data would warrant such a decision. We feel that there must be a great deal of further work done before the Melzer-Lyon method can be discarded, or relied on with great faith.

That leaves clinicians much where they were in making a diagnosis of cholecystitis, gall duct and pancreatic, as well as liver disease. The carefully worked up history and thorough physical examination with x-ray studies, gastric analyses, urine and feces reports, as well as the study of the duodenal contents, must all be considered together.

From going over a series of cases, especially the ones that have come to operation, we are of the opinion that a large proportion of patients with cholecystitis give groups of symptoms that are more or less characteristic, at least suggestive enough to cause suspicion of the gall-bladder. We say a large proportion give some such group of symptoms. There are quite a number, may be fifteen or twenty per cent. that have so little trouble that they consider themselves to be well until a sudden acute attack, or a series of acute attacks, leads them to consult a doctor. Even in this group, especially after cholecystitis and stones have been demonstrated at operation, close questioning will usually elicit some of the usual symptoms that are considered suggestive of gall-bladder disease.

"Woman, fair, fat and forty, belching gas," has been much used to suggest a type of individual prone to gall-bladder disease, especially stones. It is not likely that there is a definite type of individual that can be considered especially liable to gall-bladder disease. Women, as previously mentioned, are much more apt to develop gall-bladder infection and it seems to be about forty years of age when the clinical picture has become definite enough for a diagnosis to be made. In most of our cases there was the early history of infectious diseases, repeated attacks of tonsillitis, and not a few cases seemed to come in such definite relation to attacks of influenza that one could not but feel that it was a positive factor. Enough of the women gave the onset of their trouble from pregnancy to emphasize this relation also.

The early recurrent attacks of headache, nausea, vomiting and occasional fever were present in a large percentage of our cases, and evidence that seemed in favor of the fact that these so called bilious attacks do at least partly involve the liver is that a number of these patients finally had a more severe attack associated with pain, abdominal tenderness and definite jaundice, bile stained urine, *et cetera*. Most of the cases gave a history of irregular attacks lasting a few days, with a tendency for the attacks to become more frequent and more severe. They would consider themselves to be

quite well in the interval, though many had to select their food with more care. A patient with a damaged, infected gall-bladder is more apt to have an unstable digestion. They have less of an element of safety for abuse, and dietary imprudence is apt to lead to an attack. Another group gave symptoms that were more constant, a weight or pressure with tenderness under the right costal arch and almost continuous gaseous indigestion. Even these cases had the more acute exacerbations at irregular intervals.

Pain is apparently the most common symptom of cholecystitis. It is usually in the epigastrium. It comes suddenly and leaves suddenly. Often it is associated with gas and the patient describes this as a fullness, a pressure or even a bursting sensation, and belching almost always gives at least partial relief. Heat internally and externally is usually gratifying and often gives relief. Some of the more severe attacks are of such intense nature as to involve the diaphragm so that the patient can not get a full breath. The pain is often referred along the right costal arch and thence to the right shoulder girdle. These severe agonizing attacks nearly always indicate stones and are only relieved by full doses of morphia. Nausea and vomiting are frequent accompaniments and it is not unusual to see the pain suddenly relax its grasp after a spell of vomiting. With the more severe infections there is usually a chill or a series of chills with fever. The leukocytes are increased from twelve thousand to twenty thousand and, upon examination of the abdomen, a very tender sensitive right epigastrium is encountered. In a few cases, a distended, very tender gall-bladder can be made out. The gall-bladder is capable of tremendous distention.

Unless the case progresses to a state of empyema of the gall-bladder, or gangrene after a few hours to a few days, the attack subsides and there is another interval of apparently fair health.

In the interval many of these cases have a normal or a very slightly increased leukocyte count. Often, fairly deep pressure can be made in both the right iliac region and over the gall-bladder without much pain. Under the fluoroscope, however, many of them show a tendency to pylorospasm and from time to time they retain food in the stomach longer than the normal time. Jaundice is present in twenty-five or thirty per cent of the cases and it seems to occur almost as frequently in the patients without as with stones. Many patients have severe attacks of colic that one would feel surely was due to attempts to pass a stone and yet at operation only a cholecystitis without stones is found. In these cases the patient may have succeeded in passing the stones and, if the stools had been carefully searched, the stones recovered. This is a possibility, but it does seem as though an attack of cholecystitis can give very severe pain, difficult or impossible to differentiate in all cases of gall stones.

Pancreatitis is very apt to be associated where the diseased gall bladder has run on for months or years. Pancreatitis as a complication usually causes interference with absorption, more rapid loss of weight, and loose stools often containing an excess of fat. Gastric analysis often shows hyperacidity in the early stages. Many cases show normal values but, by the time the cases have run on to the chronic stage or to the point where a definite diagnosis is made and the patient operated on, the gastric analysis usually shows low acid values.

Malignant disease of the gall-bladder occurs in relatively a small percentage of cases. The finding of a hard nodular mass in the region of the gall bladder in a patient giving a history of strongly suggestive attacks of cholecystitis is very suggestive of malignancy of the gall-bladder. In a case recently seen, illustrative of this, there had been an attack of cholecystitis eight months previously. At the time of this attack, and apparently the only attack, there was a chill followed by temperature of one hundred and three or four, pain over the gall-bladder, excess of gas, *et cetera.* The attack had subsided in about a week but he had not felt well since. As his symptoms seemed to point definitely to a chronic gall-bladder infection, it was decided to have him operated on. At operation there was a mass of adhesions with much suspicious, hardened tissue about the gall-bladder. A bit of this tissue was examined and found to be malignant.

In conclusion, we want to again state that from a study of our cases we feel that cholecystitis occurs much more frequently than is usually supposed, and that early infectious diseases, focal infections like tonsils, sinuses, and teeth, are often present as forerunners of the gall-bladder infections. Many of the cases give histories of recurrent gastro-intestinal upset which seems to involve the hepatic system. Chronic inflammation of the appendix is prob-

ably the most frequent cause, certainly accompanying the cholecystitis in three out of four cases. An associated hepatitis is present in a large proportion of cases and it seems probable that the infection of both the liver and the gall bladder is blood borne. The Melzer-Lyon method of biliary drainage has not in our experience given us reliable enough information to make us regard the findings more valuable than other laboratory methods.

We are reporting the following case because we think it illustrates many points in the paper: (1) She gives a history of chronic tonsillar infection and the tonsils are found definitely diseased. (2) Since the age of 14 she has had recurrent attacks of what she calls "biliousness" characterized by loss of appetite, vomiting, headache and, of late years, tenderness in the upper right abdomen. In April of this year, accompanying one of these attacks, she had definite jaundice and fever.

Mrs. W. age 29 (NS No. 73), October 26, 1921, C. C. Jaundice with temperature, vomiting and pain and soreness over the g. b. region last July. Loss of eleven pounds of weight since that time and more or less soreness over the gall-bladder region.

P. H.—Measles and chicken-pox as child. Unstable nervously since the age of fourteen. Since that age she has had attacks which she calls "bilious attacks" characterized by loss of appetite, nausea and vomiting, headache and, of late, tenderness in the right upper abdomen. She has also been annoyed by frequent and transient soreness in the right iliac region. She has had several attacks of tonsillitis, the last in January 1921.

P. I.—Besides the jaundice above mentioned, she has had constipation, nervous instability amounting almost to melancholia at times, and mucus in her stools. She has also been annoyed with excess of gass in the stomach and lower bowel.

Physical Examination shows under-nutrition, infected tonsils, devitalized teeth; some tenderness under both right and left costal margin, a spastic not tender cecum.

She had a low gastric acidity; negative blood and urine.

X-ray study was negative except for some gastro-enteroptosis and evidence of colitis.

Diagnosis.—Cholecystitis with acute exacerbation July, 1921 (probably from infected tonsils), mucous-coltitis and constipation.

The following cases illustrate apparent relation between appendiceal and gall-bladder disease and also the relation of gastric analyses and other symptoms:

1st.—Mr. C., age 50 (NS No. 16), May 21, 1921. History of gaseous indigestion, loss of weight and lack of endurance, extending over approximately three years. Attacks of severe right abdominal pain with some fever two years previously, diagnosed at the time impacted bowels or appendicitis. No other definite history of appendiceal trouble. At operation, in addition to a chronically inflamed and contracted gall-bladder filled with stones, an adherent and largely obliterated appendix was removed.

2nd.—Mrs. W., age 46 (NS No. 76), April 11, 1921. Had typhoid fever at the age of fifteen. Appendectomy fifteen years ago at Mayo Clinic, for chronic appendicitis. Gall-bladder palpated at that time and said to be diseased but could not be removed because patient was standing operation poorly. Temporary relief was soon followed by soreness in right upper abdomen, often amounting to attacks of rather severe pain, going through to right shoulder, gaseous indigestion, constipation, lack of endurance, and many neurotic manifestations.

Her gastric analysis showed slight hypo-acidity. Operation revealed a chronically inflamed gall bladder surrounded by quite definite area of hepatic cirrhosis. Cultures from the gall-bladder wall (tissue) gave an unidentified coccus and also a colon bacillus.

3rd.—Mr. F.,—age 44 (NS No. 25). Had unstable digestion since the age of twenty-four, frequent attacks of diarrhea and also attacks characterized by pain and pressure in the epigastrium, often at night. He had a definite gastric hypo-acidity. No definite history of appendicitis obtained. Operation revealed a chronically inflamed and thicked gall-bladder filled with thick jelly-like bile, white plaster-like material, and few stones of the same material. The appendix showed adhesions and evidence of chronic inflammation.

4th.—R. J.,—age 56 (NS No. 36), Aprile 5, 1921. Had no previous infections of importance and had been in perfect health until eight months before seeing him. At that time he had an attack characterized by pain and soreness in the right upper abdomen, temperature of one hundred and three to four, nausea, no jaundice. Symptoms cleared gradually at the end of a week. From that time on he lost thirty pounds in weight, and was frequently

tronbled by bloating of the abdomen, by vertigo. and later by anginoid pains. His gastric acidity was moderately increased. Operation revealed malignancy of the gall-bladder.

5th.—Mrs. L. H.,—age 45 (NS No. 31), June 8, 1921. Had three children, the last two years previously. Had rheumatic fever as a child, also measles and much tonsillitis. Quinsy four years ago. No typhoid. Influenza 1918. Appendectomy for acute appendicits June, 1921. Three weeks before seen, after a meal containing hot rolls, strawberry ice cream and cucumbers, developed severe epigastric pain of colicky type, relieved by morphine sulphate. This recurred twenty-four hours later with relief in the same way. On the following day she was distinctly jaundiced and her urine was dark. She had no fever or vomiting. From this time until her operation four weeks ago, she had several similar attacks, one of which was followed by jaundice. Between attacks she had practically no digestive symptoms. Operation showed chronic cholecystitis but no stones.

1029 *Vermont Avenue, Northwest.*

References

1. New Orleans M. & S. J. 1917.
2. Rous, Peyton, and McMaster, P. D., J. Exper. Med. 34; 47 (July) 1921.
3. Sweet, J. E. Personal Communication.
4. Dunn, Arthur D. and Connell, Carl, J. A. M. A. 77: 14, October 1, 1921.
5. Bassler, Anthony, Luckett, Wiliam Harvey, and Lutz, J. Raymond, Am. J. Med. Sc. Clxii: 5 November, 1921.
6. Collected papers Mayo Clinic 1920.
7. Barker, Lewellys F., J. A. M. A. 75 pp. 1105-1109, October 23, 1920.
8. Lyon, B. B. Vincent, J. A. M. A. lxxiii, pp. 980-982. Am. J. Med. Sc. 1920, Clx, 515.

SURGICAL SIGNIFICANCE OF PAIN IN THE LEFT SIDE OF ABDOMEN.*

By R. L. PITTMAN, M. D., Fayetteville, N. C.

It is not my intention here to enter into the general discussion of the differential diagnosis and treatment of the numerous conditions likely to produce pain in the left side of the abdomen, neither do I wish to take up conditions usually produced by general pelvic inflammation in which the uterus, tubes, ovaries and sigmoid are all matted together by adhesions. My reason for presenting this paper was brought about by having had for treatment several patients suffering with chronic and more or less severe pain in the left side of the abdomen and low down across the back, in which cases an eliminative diagnosis was the only way to arrive at a diagnosis with any degree of accuracy. With such patients we have x-rayed the kidneys, including the kidney pelvis, catheterized the ureters, eliminated enlargement of the spleen, dislocated kidney, etc, all with negative findings in this particular condition. Vaginal examination may or may not reveal the inflamed condition of the left tube and ovary. In many instances a dilated portion of sigmoid can be palpated and, on pressure, a gurgle can be detected as is sometimes noticed in the region of cecum during vaginal examination.

Our attention for the past decade, or I might say two decades, has been directed almost entirely to the conditions of the right side of the abdomen and upper abdominal region. At the same time conditions in a similar way may take place on the opposite side and it is for this reason that I wish to call your attention to a few findings which have been brought to our attention in some of our cases. In 1907 Lane wrote his first paper on the so-called Lane's kink; in 1909 Jackson presented the condition designated by him as a membrane, which was known as Jackson's membrane. These two conditions were prevalent in the region of the terminal ileum and cecum. In 1911 and 1914 Royster called attention to adhesions in the left side of the abdomen.

My attention, as stated before, was directed to this condition chiefly because of the absence of findings which would otherwise explain pain which the patient had and, upon investigation at the time of operation, we have found in several cases adhesions of the sigmoid in its upper portion, which are of an obstructive and painful nature. The adhesions were forcing the sigmoid to come well up on the fallopian tube, plastered down to the side of the pelvis or, it may be, looped over in front of the tube. Such patients usually present themselves complaining of the following symptoms: As a rule the patient is an unmarried woman or may be the mother of two or three children, usually 25 to 35 years of age, with a history of painful menstruation or with some difficult labor; pain in the left side which extends all the way from the left an-

*Read before the Tri-State Medical Association of the Carolinas and Virginia at its annual meeting in Norfolk, Va., February 22-23, 1922.

terior superior spine up to the splenic flexure of the colon; obstinate constipation and, in a few cases, occasional attacks of diarrhea. They frequently complain of pain on defecation, with an expression commonly used by the patient of a stoppage. Thorough purgation usually relieves such patients temporarily, only to return when the sigmoid fills up again. There is no tenderness or rigidity of the abdomen and it is diffcult to say just where the pain is most intense. In my experience, pain has been more pronounced in lower left abdomen and low down across the back.

X-ray examination under fluoroscope is of great help in the diagnosis of this condition, although it is by no means to be depended upon as a final and unquestionable diagnosis. The explanation for this is that the sigmoid may assume many positions due to the irregularity of its attachments which are considered normal We have derived much from simply passing the tube up the rectum and watching its ascent with the fluoroscope, noting any point of obstruction that it meets in the lumen of bowel. In this way a loop of the sigmoid can usually be determined. These patients are operated upon by median incisions; pelvic inflammation is first looked after, diseased tubes or ovary on the left side receive proper treatment, and the sigmoid is examined thoroughly. In some cases the sigmoid may be adherent, as mentioned above, to the wall of the pelvis or to the tube or ovary. In this event, tension is made on the upper portion of the bowel and adhesions divided. A rectal tube is now passed to make sure that the bowel has been freed and normal lumen of bowel has been restored. After freeing the sigmoid, it is again placed in its normal position. The ascending colon is next examined. There we have found equally as many adhesions as we have in the sigmoid; in fact I have found in a few cases the position of the descending colon to be more disturbed than that of the sigmoid. This is usually true in the last three or four inches of the descending colon. In this portion, the bowel is abnormally plastered down to the abdominal wall, almost rigid and, in many instances, smaller than the normal bowel, with what appeared to be a dilated portion above. As illustrative of these findings and results derived from operation, I wish to report the following cases, which will serve to substantiate results to be expected in such cases and from such treatment.

Case 1. Female, age 34, chronic sufferer of constipation; pain low down in the back and left side. This patient at times would go anywhere from a week to two weeks without a bowel movement Patient was very sallow and a picture of chronic toxic condition which one would expect from intestinal stasis. This patient was an unmarried woman, did office work, and was naturally in a stooping position most all the time. Her urine contained a trace of albumen, no casts, increased quantity of indican. Exploratory incision was made and nothing found except extensive adhesions of the sigmoid to left tube and ovary, which was normal. Adhesions were freed and treated in the manner mentioned above. I saw this patient a short time ago. Since the time of operation, which was two years ago, she has been greatly improved. completely relieved of constipation, except for an occasional attack for only a day or two, general condition good, no pain in the left side.

Case 2. Female, age 28, mother of two children. The last delivery was by forceps and very difficult. This patient was brought to the hospital with a tentative diagnosis of absolute obstruction, with a history of chronic constipation, pain in the region of the coccyx on defecation over a period of one and one-half years, which was soon after the birth of her last child. The condition was so acute that immediate operation was deemed best and at the time of operation extensive adhesions of the sigmoid were found, with a marked contraction of the lower two inches of the descending colon with almost a band-like condition at this point. The adhesions were freed and treated as mentioned above. The patient made an uneventful recovery. This patient was operated on fourteen months ago. In answer to inquiry a short time ago, patient stated she was free of pain, had gained ten pounds, and constipation was entirely relieved.

Case 3. The third patient was one who had gone the rounds including the osteopath, finally going to Johns Hopkins Hospital and having thorough x-ray examinations. She was given a report that she had adhesions of the sigmoid, descending colon and an incompetent ileo-cecal valve. This patient was advised to have her appendix removed and

adhesions freed. In this instance I made a median incision and removed the appendix which showed evidence of chronic inflammation. I found a very fixed condition of the descending colon and upper portion of sigmoid. This patient had suffered severely from attacks of headache, nausea and vomiting, and the most obstinate form of constipation, with pain more or less over the entire abdomen, but worse in the left side. Pelvic organs were negative. This woman was married. 44 years of age, and was the mother of five children While this patient has not been entirely relieved, I have seen her at intervals and she has doubtless been benefited a great deal.

Case 4. The fourth patient was an unmarried woman, 32 years of age. Indefinte history of pain in the left side, extremely constipated, relieved by purgation, pain in the back in the region of sacrum and coccyx, was very nervous and at times suffered from melancholia. She consulted a stomach specialist who gave her an x-ray examination with a diagnosis of chronic inflammation of the sigmoid and descending colon with adhesions. Advised an operation. This patient came to me for operation and the findings in this case were similar to those mentioned above. The sigmoid in its upper two or three inches was very much smaller than normal, would hardly admit the finger, and was evidently the seat of incomplete obstruction or, to say the least, retarded the progress of intestinal contents. These adhesions were freed and while the patient was in the hospital she required very little purgation. After the third day her bowels moved regularly, and her general condition improved a great deal, sufficiently to warrant her having had the operation.

Case 5. Female, age 34 years, no children; marked dysmenorrhea for a number of years; was curetted three years ago, practically no relief. Chief complaint, pain in the left side. *Operation*: Both ovaries had small clear cysts present. Sigmoid looped over tube and round ligament well forward. This was most marked case I have seen.

Case 6. Female, age 36, three children living and well. Patient picture of marked intestinal stasis, showed loss of weight; chief complaint at time of admittance was pain in lower left abdomen and low down in back. Dilated condition of bowels in region of upper sigmoid could be made out. *Operation*: Tube, ovary and uterus negative. The sigmoid formed a complete loop over the left tube and round ligament to which it was permanently fixed.

Etiology: The above enumerated conditions as probable causes are purely speculative, based entirely upon the history and findings on physical examination of patients at the time they presented themselves for treatment. Most common of these are hemorrhoids, ischiorectal abscess, fistula in ano-rectal fissure, varicose veins of broad ligaments, stooping position, constipation, difficult menstruation, difficult labor, etc.

We find on searching our records that during the past two years, we have operated on twenty-three such cases which showed the following very interesting findings:

Nine cases had hemorrhoids present at time of operation;

Three cases had been operated on for hemorrhoids;

Two cases for ischiorectal abscess;

One case for fissure of rectum;

Two cases at time of operation had varicose veins of broad ligaments.

Practically all of them were victims of obstinate constipation.

Six cases were individuals who had followed office work or whose daily occupation required them to be in a stooping position almost constantly.

You will see from the report of these cases that something can be done for chronic constipation which has reached the stage of finally producing adhesions or at least being the result of adhesions, the physical condition of these patients being such as to prevent them from performing the actual duties of life. I do not think the diagnosis will always be accurate; in some cases it can be depended upon but in others it will be difficult to determine. Sooner or later, however, I believe greater consideration will be given this portion of the intestinal tract and the left side of the abdomen will be considered a surgical entity and receive attention in proportion to the vital organs located in the left side just as the right side has justly received it in the past.

The American Child Hygiene Association

Moved its headquarters from Baltimore to 532 Seventeenth Street. N. W., Washington, D. C., the latter part of April.

REPORT OF CASE OF MELANOTIC SARCOMA OF THE CHOROID.*

By COURTNEY EDMOND, M. D., D. D. S., Clifton Forge, Va.

W. I. S., 36, locomotive engineer in lumber camp, consulted me April 9th, because of slight impairment of reading vision. He stated that during the past four weeks he had been unable to read with accustomed facility, the print becoming indistinct after slight effort, particularly if observed from certain angles. Patient is father of eight children, two of whom he thinks may need glasses according to his own observations. He has been a healthy, hard-working man, having had but few childrens' diseases, and, possibly diphtheria. Many years ago he sustained two severe falls with blows on the head which rendered him unconscious each time, but neither was in sufficiently close proximity to affect eye now diseased. Thinks he may inherit "bad blood" because his father had many boils, but no positive venereal history elicited.

Case Notes.

Patient is robust, blond type of working man, weighing about 150 pounds. There is nothing in the history or external appearance of his eyes to suggest other than case of simple refraction. Skin dark, sallow color, but no argyrosis-like spots of pigmentation discernible. Vision O. D. and O. S. 20/30; Tn. equal and normal to palpating finger. Muscle balance: 2 degrees esophoria distance; prism duction normal, of the asthenic type. No diplopia in any part of visual field; but there is absolute scotoma in upper temporal field right eye, consistently corresponding to affected eye-ground. Irises of light blue; pupils equal reacting normally, the right being, possibly, a trifle sluggish if viewed under plus twenty lens. Homatropine for refraction: pupils dilate synchronously and equally; fundus of left eye normal. Right eye, at one meter, with ophthalmoscope, gives whitish-yellow reflex, whiter nasalward. Retinoscopy suggests plus half sphere O. S., shadow O. D. being too distorted; but with trial frame both eyes accept the plus sphere. Close inspection of right eye fundus, direct method, instantly reveals a gibbus, somewhat kidney-shaped growth, about size of pea, apparently occupying the lower-nasal quadrant of equator, projecting with a beautifully clear-cut border into the vitreous and slightly encroaching on the optic disc, looking straight in. The direction of growth seems to be slightly upward and outward. The rest of the fundus appears normal. Tumor of grayish color, firmly anchored, with retina closely adherent. No undulations, no interruptions in course of retinal vessels. The latter descend anteriorly from tumor to the normal level, leaving usual fundus tint between tumor and ciliary region. Posteriorily there is a "great desire to look around the tumor," so sharply defined is its outer limit or edge, remarked Dr. Hedges. Beneath the surface of growth a net-work of new vessels can be faintly seen, one or two larger than the others louping toward the surface. Four or five deeply pigmented specks can be seen within tumor substance, two or three directly in course of vessels. Transillumination with electric bulb on sclera of little diagnostic value, although fundus tint seems a trifle darkened nasalward.

Patient had experienced no pain up to April 9th and had always considered the affected eye his "good eye". He was of the same opinion on this date, when examined, and, naturally, accepted my diagnosis of malignancy with misgivings. As the semi-annual meeting of the Virginia Society of Oto-Laryngology and Ophthalmology was to be held at Roanoke on the following Thursday, I persuaded patient to accompany me there, where the case was exhibited, with ample confirmation of the diagnosis. At this time, three days after first seen, the optic disc was half-hidden, so rapid had been growth of tumor. The eye was enucleated the following Monday, eight days after original visit, when the optic disc was completely obscured. A few days prior to operation, patient developed pain at the bridge of nose, which was of increasing annoyance until the enucleation, when it ceased. The blind area in upper-outer field of right eye was enlarging subjectively almost daily until patient realized vision in this eye was doomed. However, the sarcoma having been diagnosed in its first, or pre-irritative, stage, with moderately prompt surgical intervention, the prognosis becomes the more encouraging. The enucleated globe was forwarded to Dr. E. Guy Hopkins, of Richmond, who kindly favored me with patholological report, as follows:

"Examination of Eye: The fundus pre-

*Reported at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, at its semi-annual meeting in Roanoke, April 13, 1922. Operated upon later.

sents a globular tumor 8 mm. in diameter at the inner, lower side of the optic nerve, pushing the optic nerve upward and outward and the retina into the vitreous. Microscopic examination of the tumor shows the structure of melanotic sarcoma. DIAGNOSIS: Melanotic sarcoma of the choroid."

A PLEA FOR GREATER EFFORT IN THE CONSERVATION OF HEARING IN ACUTE DISEASES OF THE MIDDLE EAR AND MASTOID.*

By E. W. PEERY, M. D., Lynchburg, Va.

The prevalence of ear diseases resulting in partial or total impairment or hearing certainly makes the subject selected a suitable one for discussion. Public interest has for a long time been actively concerned in the conservation of vision, and nearly all the states have laws to prevent ophthalmia neonatorum and to safeguard the eyes against injury in industrial plants, yet little has been done toward an organized effort in the prevention of deafness. This responsibility rests primarily with the medical profession, and falls more heavily upon the general practitioner than upon the otologist, because these diseases, in larger number, are first under his care.

The general practitioner and pediatrician should, with regard to ear infections in children, make a careful routine examination of the ears in all cases in which fever is present. It cannot be emphasized too often that to the man who treats children, the otoscope is just as necessary as the stethoscope. The prevalence of adenoid and tonsil disease and the exanthemata in childhood, and the frequency with which aural inflammations are found associated, render frequent use of the otoscope imperative.

The general practitioner should be familiar with the changes that take place in the tympanum in the many diseases of childhood. He will not forget that in the very small child, violent crying will cause the drum membrane to become flushed temporarily, and that in cases of severe head colds, and in some of the exanthemata, the usual congestion of the mucosa is not confined to the nasal and postnasal cavities, but involves, more or less, that of all of the accessory air spaces, including the middle ear cavity and, of course, may cause varying degrees of congestion of the drum membrane.

It would hardly seem necessary to warn against myringotomy except in cases of unmistakable bulging of the drum membrane, yet I believe it is often done when not necessary. While hasty myringotomy may be objectionable, yet in cases of active hyperaemia or congestion I would urge careful and frequent examinations of the ear so that as soon as there is bulging of the drum membrane it may be incised promptly and free drainage established. This is all important in the prevention of changes which are responsible for the vast majority of deaf ears.

It may seem unnecessary to say that extreme caution should be taken in the effort to avoid contagious diseases, such as severe colds, influenza, measles and scarlet fever, which cause congestion of the upper air passages; and, when these diseases are found, the greatest care should be taken to prevent ear complications.

All cases of so-called catarrh or chronic discharge from the nose should be referred to the rhinologist, for there is no more fertile cause of ear trouble than cases of ozena and suppurations attending sinus and ethmoid disease. The latter affections almost invariably involve to some extent the eustachian tubes and thereby endanger the hearing apparatus.

In children subject to earaches or acute infections of the middle ear, the cause is usually found to be swollen or infected adenoids and tonsils, and of course, their removal is imperative, for the fact that the length of the eustachian tubes in small children is short and the lumen large renders infection easy.

Ballinger says that 66% of diseases of the middle ear are due to adenoids. They harbor infection and prevent ventilation and drainage of the eustachian tubes and middle ear, causing congestion and thickening of the mucous membrane lining the entire tubo-tympanic tract. This often results in an exudative catarrh with perhaps distinct organization of the exudate, and possibly adhesions. If the vault of the pharynx is cleaned out and treatment started early in these cases, the hearing will not be damaged. If long delayed, there will be more or less permanent impairment. The more active infections leading into middle ear suppurations and mastoid disease, demand the most painstaking care if we would protect the integrity of the ear.

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology in Lynchburg, October 21, 1921.

The anatomical structure of the mastoid must be considered in its relation to the etiology and treatment of mastoid disease. Pneumatic mastoids are found in 40%, diploic in 20%, and mixed in 40%; so we have pneumatic cells in 80% of mastoid bones. These pneumatic cells are invested with a tender pale mucosa and communicate with each other by apertures. While in some cases extensive communication between the antrum and mastoid cells exists, in others the opening is so narrow that only the smallest needle can be passed through. Occasionally, the entire mastoid process consists of one or two large cavities, at the upper portion of which a canal, scarcely large enough for the passage of a bristle, is found communicating with the antrum. In acute suppurative otitis media there is simultaneous congestion and cell infiltration of the mucous lining of these mastoid cells, and they almost invariably contain pus. If the small openings between the antrum and mastoid cells become occluded by the swelling of the lining membrane, the pus cannot escape from the cell cavities, and it is either absorbed, or, as very frequently happens, we have breaking down of the lining mucosa, an inflammation of osseous tissue, and a true abscess formation. The latter result is especially likely to occur in the more infectious aural diseases, owing to their destructive character.

We have then a condition in which it is easy for infection to gain entrance, and, with the usual inflammatory changes, drainage is difficult or impossible. In a bony structure like the mastoid, infected and containing pus, the results are too often disastrous. The large cells occur at the apex or near the sigmoid sinus, so it is not surprising that these cannot drain, and that almost without exception the seat of the abcess is found in the middle and lower parts of the vertical mastoid.

As stated before, the avoidance of middle ear suppuration should be our constant aim, but after it has developed, what measures will most surely prevent further progress of the disease and impairment of hearing? We will consider them briefly.

One often finds that oils, pastes and powders have been used to relieve the ear ache, with the result that the ear canal is filled with a sticky mass which not only obstructs drainage when the rupture of the tympanic membrane occurs, but prevents a proper examination without a thorough cleansing of the canal. This should be very carefully done by the attending physician. If he finds that rupture has occurred, and that the opening is not sufficiently large to give free drainage, he will make it larger. If there has not been a rupture, he can see whether or not it should be incised; if not, he can carefully watch the inflamed membrane from time to time for evidence of fluid in the middle ear cavity. This may require two or three examinations a day, but they should be made. If the acute inflammation does not soon subside, bulging of the membrane will be noticed, when a free incision should be made and the ear irrigated two or three times a day. The aurist should irrigate the ear at least once a day, for even a trained nurse cannot thoroughly cleanse the ear. The aurist frequently finds, after his own irrigations, that fibrous deposits are retained which would prevent free drainage, and which can be removed only by the cotton tipped applicator.

Perhaps frequent bacteriological examinations of the secretions from an acute suppurative otitis should be made. The presence of streptococci, especially the capsulated, should call for the most careful watching, as their presence seems to forebode complications, and one should be doubly quick to operate if the case does not progress in a very satisfactory manner. Of course, the drainage should be watched, and the perforation should be prevented from closing so rapidly as to interfere with free drainage. If the perforation closes while the middle ear still requires drainage, it often happens that mastoid symptoms develop almost immediately. If in doubt as to the condition, test the hearing power. If this is reasonably good we may suppose that the middle ear is clearing up satisfactorily. On the other hand, very great impairment of the hearing acuity will indicate that the tympanic cavity is by no means normal, and perhaps still contains pus, and therefore the drum membrane should again be incised.

I have already referred in this paper to the fact that in acute suppurative otitis there is more or less pus in the mastoid cells with hyperaemia of their lining membrane. In most cases these changes will rapidly return to normal, so that, at about the end of the first week or ten days, the mastoid region is again normal and free from pain. Those cases that do not terminate so happily must have the most painstaking care.

Our text-books state that acute typical mas-

toiditis sets in during the three or four weeks of acute middle ear suppuration, after more or less prodromal signs. Are there not in these so-called "prodromal signs" some clear indications for an earlier operation which will save the integrity of the hearing organ and prevent the more advanced changes?

The principal object of this paper is to drive home the fact that we should not defer the mastoid operation until we see unmistakable external signs of mastoiditis. Earlier diagnosis and operation would save the hearing in many, many cases. Then let us see what earlier indications we have that may be helpful.

Of course, we all recognize that there may be extensive abscess formation in the mastoid process with little or no fever and without pain. Politzer writes that in some of the worst cases the patients do not feel pain and that sleep is undisturbed. While this is true, we do usually expect pain. The author referred to states that "the diagnosis of an abscess is almost certain if pain in the mastoid (with or without swelling of its integument), persistent fever, sleeplessness, nervous excitement, profuse otorrhoea and narrowing of the meatus continue longer than eight days."

Once the drum membrane is opened, either by nature or by the surgeon, if there is no involvement of the mastoid, we should not expect pain; so we can safely say that in a case with perfectly free drainage through the external auditory meatus with no abatement of pain, the mastoid should be opened. It may also be said that if the pain continues after the discharge ceases, or if the pain returns after being absent a few days, operation is indicated. If there is extensive tenderness over the mastoid, which is not relieved by drainage, or if it continues after otorrhoea ceases, or develops later, we should operate.

Indications From Discharge: A discharge is seen in the majority of acute mastoid cases. Deficient drainage usually produces an exaggeration of the mastoid symptoms. Diminution of the discharge should be associated with the reduction of pain and tenderness in and about the mastoid, and perceptible improvement in the patient's general condition in order to justify the conclusion that the disease is progressing favorably. If the drainage in considerable amount abruptly ceases, returning a day or two later, the patient's other symptoms meanwhile exhibiting no improvement, a mastoid involvement is indicated.

A profuse discharge continuing for more than one week, particularly if associated with the continuance of other mastoid symptoms, and more especially if the local and general symptoms increase in severity, points with almost unvarying certainty to acute mastoiditis.

A free discharge of straw colored fluid or pus is very often a clear indication.

Another exceedingly important indication which must always be kept in mind is the presence of an enormous discharge, more than can be accounted for as coming from the middle ear and adjacent cells. This is, in Mundt's opinion, one of the most positive indications for operation.

Temperature: Some difference of opinion exists as to the value of this symptom. While numerous cases of extensive necrosis of the mastoid cells are reported in which the temperature has run almost a normal course, yet it is a fact that it is usually present, and its continuance with free discharge for more than a week or ten days is an indication for operation.

Changes in Tissue Over the Mastoid: Slight redness and swelling over the mastoid as an early concomitant in children is of little value, but its continuance in otitis after a week or ten days would point to mastoid abscess. The presence of either in an adult probably calls for an operation. Of course, in either children or adults, the characteristic sign of decided swelling in the mastoid region, displacing the ear outward and downward, is a late indication, and, if possible, the case should not be allowed to reach this stage.

Sagging in Posterior Superior Meatal Wall: This is a decisive symptom and demands immediate operation. Associated with this sagging we often have more or less pronounced bulging of the upper and posterior portions of the drum, and the fundus of the canal is much reduced in size so that only a portion of the drum is visible. Politzer states that if a pulsating light reflex at the point of perforation continues to be seen two weeks from the date of rupture or incisions and the ear is still discharging, a mastoid abscess is present.

Blood Examination: Estimates of the degree of leukocytosis and polynuclear percentage present in a given case, are held by most observers to be of doubtful value as an aid to diagnosis. It is probable that a differential blood count which exhibits both a marked

leukocytosis and a high polynuclear percentage is of value in suggesting mastoid involvement, taken in connection with other symptoms and signs.

The Roentgen Ray: Several plates taken at different periods may show the progress of the mastoid disease, destruction of the septa, and the presence of cavities. Taken in connection with other clinical findings the plates are of value, and should be taken as a routine, though it is in late mastoid disease that the findings are most positive.

These signs and symptoms, if carefully watched during the progress of our cases, will give us reliable indications for an early operation in those needing it, and will go far toward preventing degrees of deafness which would otherwise certainly follow.

In considering these symptoms in cases of purulent otitis, we will be more inclined to early operation when the condition is a concomitant or a sequel of one of the acute exanthematous diseases; and particularly is this true with scarlet fever and measles. I might also add to this list influenza.

I want to make a special plea for an early operation.

If, as has been said, the symptoms indicative of abscess formation have lasted eight or ten days; or better still, if after eight or ten days of drainage and careful treatment of a discharging ear there is not decided relief in the symptoms, the mastoid should be opened.

If done early the operation will be a simple mastoid, the ear will stop discharging in a few days, the wound will heal in two or three weeks, and we will have a normal hearing apparatus. Since the improvement in technique in mastoidectomy in the past fifteen years, it has ceased to be an emergency operation. The prognosis is excellent as to complete recovery. The risk run surgically is very small compared to that taken in doubtful or severe cases by delayed operation. Instead of the operation being considered one of emergency to save life, it should be considered in its relation to the conservation of the integrity of the ear as an organ of hearing.

The advantages which the early opening of the mastoid offers consist essentially in the fact that the abscess is still small, and that by scraping out the diseased portion not so much loss of bone substance is produced as when the abscess has existed for a long time: furthermore, that the process heals more rapidly, and that the middle ear affection runs its course more quickly. The great advantage of an early operation is that it more quickly permits resolution of the inflamed tissues surrounding and involving the essential structures which govern the power of hearing. This inflammatory process, of course, means an infiltration of the mucous membrane covering the important structures in the middle ear cavity. The very great importance of an early resolution of this infiltration cannot be questioned. This condition is prolonged by discharge from infected mastoid cells, and later even granulation tissue will spring up, covering the tympanic walls, the ossicles and foramen, and will ultimately, even after operation and cure of the mastoid, form a solid fibrous layer with probably connective tissue adhesions. This means damage to the sense of hearing which cannot be undone. If the granulation stage is permitted to develop, and the radical mastoid operation is performed, we have the loss of essential parts of the organ of hearing and resulting deafness. In delayed operation there is also the very great danger of labyrinth involvement. Why wait for these changes which destroy or impair hearing?

An early operation means a simple mastoid, and the conservation of hearing. A late operation probably means a radical or more extensive operation, with decided or complete loss of hearing.

References

H. G. Mundt, Illinois Med. Jour. Nov. 1917.
O. M. Rott, Northwest Medicine, Feb. 1920.
R. J. Tivnin, Illinois Med. Jour. Feb. 1920.
H. Newhart, Journal-Lancet, April 1st, 1920.
Politzer and Alexander, Vienna.

THE RELATION OF MODERN DENTISTRY TO THE PRACTICE OF MEDICINE.*

By GUY R. HARRISON, D. D. S., Richmond, Va.
Associate in Surgery (Oral), and Director of Dental Department, Stuart Circle Hospital; Member Virginia State Board of Health.

Dentistry is a special field of medicine and is related to general medicine, as any other of the specialties. The mouth, its contained and adjacent structures, cannot be considered apart from the body as a whole. Assuming that this is not disputed, it may be further stated that the dental specialists' field can no longer be considered limited by the boundaries of the oral cavity. He is engaged in prolonging life

*Read before the Tri-State Medical Association of the Carolinas and Virginia at Norfolk, Va., February 22-23, 1922.

and his viewpoint should include the body as a unit.

Let us see what is demanded of the modern dentist. To solve the problems he daily meets successfully he must be a skilled diagnostician, and as such be familiar on one hand with biology and mechanics and on the other with physiology and pathology. He must have a high degree of technical skill in addition to his general knowledge of medicine and surgery. His work carries him into the fields of chemistry, bacteriology, metallurgy, physics, electricity, and art. Without an artistic sense he will fall short of modern standards.

It is true in dentistry, as in general medicine, that each embraces a scope too wide for any ordinary mind to grasp, and of necessity has been divided into specialties, each with its possibilities and its problems. In the past the dentist knew too little general medicine. Those in charge of dental education have been making a sincere effort to correct this. No one will deny but that it is desirable for dentists to have a medical degree. The dental course now covers four crowded years, and in medicine the interne year is being rapidly demanded, thus it would require a minimum time of seven or eight years to obtain both degrees. You will agree that this would necessitate efforts out of proportion for the end sought. It would be a splendid thing if our medical and dental schools would combine their teachings so as to grant both degrees within a reasonable limit of time. Aside from the educational problems confronting modern dentistry, let us hope that the modern dentist measures up to his responsibilities.

In order to place dentistry in its proper relation to the practice of medicine, it is necessary that the medical practitioner know more of dentistry. I shall speak frankly of this and ask that you bear in mind that my statements are made with the highest motive of interest to medicine and dentistry, but above all the good of the patient. Medical men as a class are not interested in dentistry, so do not acquaint themselves with mouth pathology or the problems the dentist has to face. To the average practitioner of medicine dentistry consists of filling cavities in teeth and supplying lost ones. There is not the spirit of co-operation between us that there should be, and the patient often suffers as a result. Both dentists and practitioners of medicine are to be blamed. The correction of this fault depends upon mutual understanding and respect. In order for the physician to understand the problems of dentistry, he should be grounded in the fundamentals of dentistry just as the modern dentist is in medicine. No one, I am sure, would advise teaching the undergraduate medical student technical dentistry, but he should be taught pathology of the mouth, its clinical recognition and treatment, to at least equal the instruction given him in, say: Ophthalmology, Laryngology and Otology, or Dermatology; if this were the case one would not hear Doctors of Medicine make a remark like this: "Dr. So and So must not be a good dentist; he filled a tooth for me and the filling did not stay in but a short time." Viewed from a biologic standpoint it is remarkable that foreign, inanimate materials can be used to restore a lost part of an organ and the restored part function, so rather than receive condemnation Dr. So and So should be lauded for his ability to produce dental restorations that last and function, in some instances, for fifty years or more.

Since, as stated in the opening paragraph of this paper, dentistry is related to general medicine as any other of the specialties, it behooves the members of both professions to make every effort to bring about a more cordial relationship. While both professions work together after a fashion, the rate of improvement is slow. There should be a common literature and we should meet together for discussion of our problems, to the end that our services to our patients be improved. There should be dentists on the staffs of hospitals, and a part of organized medical groups. The selection of the dental member of such staffs should be made only after careful investigation as to his ability and standing in the dental profession. Unfortunately, often this is not done. Physicians should be members of dental societies and dentists of medical societies. Despite the fact that in 1887 the American Medical Association passed a resolution declaring dentistry a specialty of medicine and providing for those holding the D. D. S. degree to become members, it is strange that there are very few medical societies to which dentists are eligible for membership. It may not be amiss to call your attention to the fact that dentists holding Associate Fellowship in the American Medical Association have all the privileges of Fellows. It might be regretted

that comparatively few dentists have availed themselves of this opportunity.

The following editorial appeared in the MEDICAL RECORD for March 1921

In an appeal for closer affiliation between the two professions, the editor says:

"This mistake of aloofness or assumed superiority on the part of the medical profession was made when dentistry began to acquire a standing as a branch of therapeusis, with the result that the two professions have long existed side by side, semi-antagonistic and mutually ignorant of each other's teachings.

"It is only recently that the inconvenience of this duality in surgical and medical practice has begun to enter the minds of practitioners of both the professions, and in consequence there has been a mutual drawing together of the leaders in these two branches of the healing art. The recognition of root abscesses and Riggs's disease as foci of infection, bearing upon distant organs and even the brain, has served to show the mutual dependence of the two professions; but it was during the late war that the recognition of dentistry as a potential or actual branch of surgery was effected, this being forced upon the Army Medical Department by the brilliant reconstructive work of the members of the Dental Reserve Corps. There will still be accidents calling for skilled work of this nature, but it is along the line of preventive medicine and hygiene that the co-operation of the dentist and physician will produce its greatest results. The public will be instructed in mouth hygiene, which is inseparable from general hygiene, and for this work reciprocal action of members of both professions, on the platform and in the press, is needed to feed the public appetite for knowledge of how to care for the body.

"In many other ways the dentist and physician could work together to mutual advantage and, as a beginning, an 'exchange of pulpits' would greatly promote the desired 'rapproachement'. It is seldom that a dentist reads a paper before a medical society, and a physician speaking before a dental society is a still more rare object. This is not as it should be, for practitioners in either profession have much to learn from those in the other, and preventive medicine, as well as therapeutics, would profit greatly by this mutual instruction."

In the study of a case, the physician should obtain and act upon the opinion of a capable mouth specialist, namely: a modern dentist. He should demand from the dentist a real mouth examination and not an inspection of the teeth for caries only. It is my belief that a mouth examination should form part of an examination of every case studied. As Vaughan[1] says: "Before ane can successfully treat any case of illness, it is essential that a correct, as well as a complete, diagnosis be made." Time does not permit me to go into details as to what constitutes a mouth examination, but in my opinion such an examination is not complete without a Roentgen Ray examinaton of the teeth, jaws, and often the maxillary sinuses. The x-ray findings should always be interpreted by one trained in the clinical examination of the mouth. L. R. Main[2] states:

"To my mind one of the greatest detriments to an X-ray examination of the teeth and jaws lies in the prevalence of this examination by those who are not thoroughly trained in this particular field of work. The mistakes made are simply appalling and some of the radiodonic interpretations would be a joke if it were not so serious."

Roentgen Ray findings should be thought of as a symptom; their greatest value lies in their positive findings. To quote Call[3]:

"I doubt if there is any one diagnostic procedure from which so much information has been expected: if there is any one method so much relied upon to give determining information in such a variety of conditions. The more clearly we understand the details of Roentgen Ray examinations by watching the procedure, the more closely can we approximate the value of the findings as applied to a particular case. Like other laboratory procedures, at times, a sharp cut, unassailable diagnosis can be made without reference to the clinical history of the case and in complete ignorance of all facts connected therewith. In a majority of the cases, however, the findings are suggestive and explanatory rather than conclusive."

With this I am in entire accord since a diagnosis arrived at and treatment of mouth pathology based on X-ray examination alone will often meet with failure.

When a physician refers a patient to a dentist for an opinion he should supply the dentist with all the information he has in reference to the case, for we must remember that if the dentist treats a patient upon the basis of the mouth being a thing apart from the rest

of the body, he is falling far short of the measure of his responsibilities.

I realize that in a paper of this nature a discussion of mouth infections is expected. The time allotted is not sufficient to take up this subject. Permit me here to incorporate certain conclusions I have reached in reference to mouth infections:

1. There is no such thing as a harmless mouth infection.

2. Mouth infection may be the primary cause of disease elsewhere in the body; often it is an influencing factor.

3. Contrary to what is the usual belief, in the majority of cases the infections about the root ends of the teeth are of a non-suppurative type and their harm to the body is due to toxins rather than to metastatic invasion by the organisms themselves. It is unwise and often dangerous to attempt to eradicate by surgical means many chronic oral foci of infection at one time. The old adage "Make haste slowly" should guide us.

4. The claim that no pulpless tooth can be safely retained is as absurd as the effort to retain all pulpless teeth, no matter how badly diseased. Physicians should not order teeth removed, nor should dentists carry out such orders, unless both are familiar with what modern dentistry can accomplish in eradicating disease about pulpless teeth. The same applies to infections of the investing tissues of teeth.

5. To attribute nearly every ailment to which man is heir to mouth infection is poor logic, but to stop one's ears to apparently well proven facts, is equally illogical.

6. Whenever the diagnosis of mouth infection is made, we should always remember that we are dealing with a condition that has the potential power of very serious trouble. In many instances there will probably be no ill effects, but the possibilities should always be considered.

7. It is not necessary or right to remove a useful pulpless tooth unless pathology or bacterial invasion can be found. The writer is well aware of the fact that the presence of bacteria does not within itself constitute disease, but the presence of bacteria within interstitial tissue; carrying on their life cycle and the reaction of the tissues to their presence and function, does constitute disease.

8. Both medical and dental professions need more accurate information on this subject, more painstaking, and therefore better diagnoses, and a better sense of clinical values.

I have made criticisms of some physicians and subscribed to the opinions of others in the full realization that the sins of commission and omission of the dental profession are many. These criticisms have been entirely impersonal and made in an effort to provoke progress.

In closing I will quote from a paper by Best and Waldron[4]:

"Between physician and dentist are responsibilities and courtesies which, if ignored, are bound to cause trouble; whereas, if accepted with full co-operation, will mean greater service to the patient."

Professional Building.

BIBLIOGRAPHY.

1. Vaughan, Warren T. The Philosophy of Medical Diagnosis. Virginia Medical Monthly, May, 1921.
2. Main, L. R. Some Observations of the Radiodontist. The International Journal of Orthodontia and Oral Surgery, Feb. 1921.
3. Call, Manfred. Some Points in Diagnostic Practice. Warwick County (Virginia) Medical Society, 1922.
4. Best, Elmer S. and Waldron, Carl C. Oral Diagnosis and Treatment. The Journal of Dental Research, Sept., 1921.

CITIZENSHIP AND THE PHYSICIAN.*

By E. L. KENDIG, M. D., Victoria, Va.

The title "Citizenship and the Physician" reminds us that we are first citizens and then physicians. It reminds us further that the responsibility of good citizenship rests upon every man and every woman.

The duty of citizenship bears as heavily upon the shoulders of the physician as upon the shoulders of any other man. On account of their professional knowledge, it is apparent that physicians should actively take the lead in matters of public health and in those things with which the medical man is conversant. The physician, by reason of his personal contact with people, is in a most advantageous position to perform the duty of good citizenship, but it is a sad and acknowledged fact, however, that both individually and collectively our profession does not take a very active interest in public affairs.

I shall not try in these few remarks to present anything that is new. I shall not attempt to discuss public affairs generally but

*An address delivered before the Seaboard Medical Society at its opening session, in Norfolk, Va., December 6, 1921.

shall confine this discussion to only a few points of special interest. The whole work of the physician is, or should be, for the benefit of the human race and, in order for the physician to accomplish the most, the work of the medical profession should be well understood in a general way by the public whom he serves. Unfortunately there is evidence on every hand at the present time that the public does not understand well the work and aims of the medical profession. I shall mention at random a few bits of evidence which show that the public is lacking in ordinary knowledge of our problems. I believe that it can be further shown that the public is not altogether responsible for this condition, but that it is largely the result of the political indifference of the members of the medical profession.

One of the best examples of misunderstanding on the part of the public is seen in the establishment and maintenance of State Medical Examining Boards. When the physicians advocate more stringent examinations for those desiring to practice medicine, the impression prevails at once that it is for the benefit of the physicians. The public in a large measure fails to recognize that higher requirements for license to practice medicine is for their benefit and not for the benefit of the physician.

It is hard to get a large proportion of our population to recognize the importance of health measures. Much progress has been made in this direction in the last few years, but it has been made with a great deal of effort, and there is yet much to be done. To any man that gives the matter any consideration at all, it would seem that there is a lack of uniformity and co-operation in the administration of the health laws in the various states. I do not mean by this that I have any criticisms of the various health agencies now at work in this country. Great things have been accomplished by our City and County Boards of Health, by our State Boards of Health, and by the medical departments of the Navy, Army and by the Public Health Service of the Federal Government. I wish especially to commend the work done by our State Board of Health under the direction of Dr. Ennion Williams. However, more can be accomplished if all these agencies were united into one organized body. I am a believer in State Rights. I believe in local self government in all matters which concern alone the State affected, but public health problems cannot be confined to any single State. The same health laws should apply to like conditions in every State, and this can only be accomplished by placing all our various health agencies and departments under the control of the Federal Government. I have never been a believer in the change of the Constitution to meet every whim and fancy and I do not believe in that now, but I am in favor of a control of public health matters in every State by the National Government, and a change in the Constitution of the United States to that end, if necessary.

Let us see if our Government gives the same consideration to health matters as to its other departments. The President has a cabinet of able men to act as his advisers. There is one to look after foreign affairs, one to prepare for and direct the machinery of war, one to have charge of the navy, one to act as the head of the postal system, one to control finances, one to represent labor and so on, but no man there is charged with the duty of looking after the most essential thing in the life of a nation, the health of its people. In making this survey, we find another condition all about us which needs a remedy. We see that the so-called religious scientists, charlatans, patent medicine exploiters, psuedo-professional opticians, spine adjusters and the like, flourish on every hand. The cause of this is easy to see. It is the failure on the part of the public, through lack of information, to differentiate between the true and the false. I could go further: I could call to our attention many similar things, but it is not necessary. I would like, however, to touch upon one other thing, which, I think, has an important bearing on this whole question. Take the common ordinary history of your country in use in the public schools, and see if you can find between its covers enough information to give you any idea of the advances made in public health work or the science of medicine during the last 100 years. You will find there when the first steamship was run up the Hudson, you will find there when the first message was sent over the telegraph wires, you will find there the success of the cotton gin, you will find there what has been done with electricity, you will find there the names and personalities of the men who have been presidents, you will find there a record of the various wars and the names and achievements of its heroes, and you will find there most everything else of public interest except

what has been accomplished in preventive and curative medicine.

You will hardly find in the every day school history in use in our public schools a story of the victory over malarial or yellow fever, you will hardly find what prophylaxis against typhoid fever has accomplished, you will not see a record of when appendicitis ceased to be a colic and became a pathological entity, you are not apt to find a story of the eradication of the hookworm. In short, you will find but little in our school histories of that remarkable successful fight that has been made in the prevention and cure of diseases. The children of to-day are the men and women of tomorrow. Is it any wonder, therefore, that the public fails to understand? We could go further into detail, but it is not necessary. The main point of interest should be the cause and remedy. We know that the good-will of the public is with physicians in all things intelligently understood. In order to remedy these faults in our educational system it is only necessary that the medical profession cast off their political inertia, and throw their active influence in public affairs for the enlightenment of the whole people along these lines. Naturally, the question would be "How should this campaign for education or a better understanding be carried on?" A great deal can no doubt be accomplished through the men's and women's business, political and social organizations. A more fertile field, however, has been pointed out. This is the proper education of the child. Educate the children of this generation properly, and the next will be a generation of men and women who will be able to weigh properly matters of health and disease. Every child in the public schools should be taught physiology and hygiene. The course in physiology should not cover only a part of elementary physiology. I recall seeing a school physiology which did not mention the alimentary system from the stomach down and was as silent as the tomb on the whole urinary system. This course should be complete, and a separation of the sexes in one section of the book provided for, if necessary. Every child in the public schools should be taught the principles of preventive medicine. The consideration of preventive medicine is perhaps of more importance than any branch of medical or health work to-day. Every boy and girl in the public schools should be given a knowledge in the workings of the County, City and State Boards of Health, the medical department of the United States Navy and Army and the U. S. Public Health Service. And lastly, the school children of this country should be taught a history of the various steps by which all these things have been made possible. It is a fact that the public schools teach at present a little of some of these things, but it is not sufficient to enable its pupils in after life to vote intelligently on health questions, it is not sufficient to enable them to differentiate between science and quackery, and it is not enough to give them a common-sense conception of the ordinary medical problems as they exist to-day.

It is evident that the curriculum of the public schools should be changed in this respect. Whose duty is it to bring about this change? It is clearly the duty of the physicians. How can it be done? The answer is as easy to find as the cause. The policies and courses of the public schools are mapped out and controlled by the county and state school authorities, and these school authorities are selected either directly or indirectly by the vote of the citizens. When the physicians, both individually and through their organization, bring enough pressure to bear upon the school authorities to cause them to recognize the importance of this matter, then one of their duties of citizenship will have been performed. I do not pretend that all the troubles of the profession will vanish if this is done, but I am convinced that, with a proper education of the boys and girls of to-day in a full understanding of the work of the medical profession, the physicians of the next generation will have few charlatans, spine adjusters and psuedo-scientists to deal with, that health matters will become a paramount issue in our national life, and that the profession will occupy in the minds of the public that place of confidence it so richly deserves.

HOME TREATMENT OF TUBERCULOSIS.*

By R. L. RAIFORD, M. D., Sedley, Va.

Recent experiences in the treatment of tuberculosis have proven beyond any shadow of a doubt that institutional treatment is preferable to even the best of treatment that can be carried out at home. This is true, not because the men in charge of sanatoria know so

*Read at the meeting of the Southside Virginia Medical Association, in Suffolk, March 14, 1922.

much better how to treat such cases than does the up-to-date general practitioner, but because it is so much easier to get the patients to form the simple but essential habits necessary in successful treatment in a place where everybody else is doing the same thing, and because of the further reason that the patient is removed from the temptation to do things around home that, though they seem trivial, so often spell the difference between success and failure in the final outcome of the disease.

Yet, in spite of these very evident facts, we are facing the further facts that, in our State alone, over three thousand people die annually from this greatest of all preventable plagues, and that to take care of this situation we have in Virginia in the State and private sanatoria together, only about six hundred beds meant especially for incipient and moderately advanced cases, with practically no provision for those unfortunates who have passed into that stage where hope of recovery is forever lost.

These, coupled with the further fact that it has been and still is the tendency of a large proportion of us to make a diagnosis of tuberculosis and then lay down on the job because we considered the case hopeless, should stir every fibre of manhood in our being to be up and doing something to erase this blot from our profession.

It has been suggested that we should have in our State at least as many beds for these unfortunates as there are deaths annually, and even then we could only make a beginning in the successful fight on the disease. But we not only do not have this number of beds but we have not even the remote probability of having that many, and if we had the beds, on account of the indifference of people regarding the advantage of sanatorium treatment, it would be hard to get them filled for some time to come yet.

This great issue, then, naturally resolves itself, as do all other new and progressive movements, into a question of educating the public mind to understand fully the essentials in the fight we must wage, if our efforts are to be successful.

Dr. Oliver Wendell Holmes once said that the education of a child should begin with its grandparents. This great truth applies even more forcibly in training humanity to understand fully the essentials needful in keeping our bodies fit and healthful than in the more strict meaning of an education through the schools and colleges of our land. The moral is that in our home treatment we must not alone consider the unfortunate patient but must, by every known means, continually and incessantly publish in blazing words of truth to the public the fact that tuberculosis can be absolutely prevented and that, if taken in time, it can be cured. Let these facts be so impressed on humanity that all idea of the inevitableness of death is dispelled from the mind of the patient and we will have gone a long way towards a successful line of combat; for loss of morale is just as harmful in our fight against disease as it is in military battles.

In considering an outline of home treatment, let us ever bear in mind that we have, in most cases, just as good equipment in essentials as the best sanatorium can boast of, that is, fresh air, sunshine, rest and food; and we, as general practitioners, have the added very important advantage of a good chance to get our patient early. The secret lies in skillfully using these means at our disposal.

One of the evils of the past which, I am glad to say, is fast disappearing has been the tendency for the profession to be evasive in the interpretation of chest symptoms to the patient or to the family. The doctor now, however, is fully aware that he is not reading death warrants to patients when he diagnoses tuberculosis in its early stages and so the greatest bar to frankness is forever removed. It should not be difficult, then, for even the most tender hearted doctor to tell the whole truth.

The following limericks tell in a jocular though truthful way the whole story:

"A weak, tender-hearted M. D.
Had a patient with early T. B.
He called it a cold
And the lie that he told
Catalogued that M. D. as N. G."

To the contrary

"A competent doctor named Bliss,
Had a case of Tu-ber-cu-lo-sis,
He told the whole truth
And now a bright youth
A nice shiny coffin will miss.

Let us then begin our home treatment back where neglect and environment are laying the foundation for a crippled system which will prove an inviting habitat of the tubercular germ. Let us get in the habit of telling people

that a good form of insurance against tuberculosis and for general good health is the best care of the mother before and during pregnancy, and both mother and child during and after birth. A healthy mother, other things being equal, will bring forth healthy children. Except as an emergency, the midwife should have no place in the advent of human life, for every free born American has the inherent right to be ushered into life under more favorable circumstances than a midwife can provide.

Having seen to it that each infant has a fair start and is properly cared for during early childhood, let us not forget that diseased tonsils or teeth can and often do lay the foundation for a later tubercular lesion.

A poorly ventilated sleeping or living room should be outlawed, and it should be indelibly stamped on the mind of every parent that a spool under the one window of a room does not properly ventilate it. It is appalling how many seemingly intelligent people neglect this important matter until the disease has already begun its inroads, when a little intelligent reflection should convince them that if tuberculosis can be cured by fresh air it can far more easily be prevented by it.

Our school rooms should be made airy and sanitary, and every course from the primary grade up should include the teaching of some of the simple truths of how to avoid the contracting of tuberculosis. It is by constant repetition that actions become habits and there is no better place to have the truths of the Stay Well Habit stamped on the minds of people than through the everyday contact of an intelligent conscientious teacher with her pupils.

Let us also bear in mind that poverty, want and ignorance breed filth, insanitation and disease, and that good roads, good schools and prosperity tend to dispel such evils. We as doctors can and should do much through the influence we exert in our respective communities to stimulate better and more healthful citizenship which will tend towards prosperity and happiness, for misinformation and ignorance of public issues is one of the most potent causes of the poverty of the South to-day.

But the happy day when we shall have put a stop to the ravages of tuberculosis is yet a dream of the far distant future and we must devise some home treatment for the unfortunate patient who is sick now and unable to go to a sanatorium. Fortunately, most of the things which help to prevent help also to cure or alleviate.

Medication is restricted to the treatment of troublesome symptoms and complications and has little place in the curing of the disease. Fresh air, rest and diet supply the key to any line of successful treatment. Even the harassing symptom of cough is frequently much benefited by rest and, in case of hemorrhage, rest is the most important remedial measure. By rest we must insist on absolute rest in bed. Especially is this important in the home treatment of these cases since it is so easy for them to start out to do just a very little and wind up by such exertion as becomes exhausting and detrimental.

When the case has ceased to run a temperature, moderate and carefully graduated exercise may be allowed or even encouraged, as the case may be, but never to the extent of exhaustion.

The importance of an abundance of fresh air is so self evident in this class of patients as to need no further comment here. In feeding we must always bear in mind that, as a general rule, it is best to let our patient's peculiar likes and dislikes for certain foods be a guide to a proper diet as to kind and quantities given. A general diet well taken and properly assimilated is by far preferable to a textbook diet that the patient does not like. Forced feeding has had its day and has been discarded as of questionable value if not of actual harm in a large number of cases.

We must at all times bear in mind the importance of safeguarding the other members of the family and the public generally. Insist on the use of paper handkerchiefs when coughing, and of proper receptacles for the sputum, both of which are to be burned. See that these patients develop the habit of not putting their fingers on other objects or in the mouth, and see to it that all dishes and linens are kept separate and are thoroughly cleansed and disinfected often.

Most of these essential rules are simple but, by insisting on a rigid adherence to them, we may not only prolong and make immensely more comfortable these patients while they live but we may give them and ourselves the gratifying satisfaction of knowing they have not been a source of infecting their dear ones and others with whom their lives are thrown.

CHRONIC ENDOCERVICITIS.

By E. W. TITUS, M. D., Washington, D. C.
Associate in Gynecology, George Washington University Medical School.

The frequency with which infection of the endocervix occurs, attended by its disastrous sequences, demands that it be given consideration commensurate with its clinical importance. Though it constitutes a distinct clinical entity, current text books of gynecology accord it only slight consideration as such, and treat of it as an incident under captions such as "Cervical Catarrh." "Hypertrophy of Cervix," "Erosion," "Ulceration," "Eversion", etc., all of which are only different features of the same process.

Functionally as well as structurally, a sharp line of demarcation differentiates the mucosa of the cervix from that of the fundus. Physiologically, the cervical canal is nothing more than a communicating channel between vagina and uterine cavity. It takes no part in the cyclic changes of the endometrium essential to menstruation, but the one feature of greatest practical significance is the disparity in pathological manifestations displayed above and below the internal os.

It is now a well established fact that the normal genital tract is, above the external os, germ free. The cervical mucosa is markedly susceptible to infection, whereas the endometrium is, under ordinary conditions, practically immune. These facts have been conclusively demonstrated by Winters and by Curtis.

Curtis, in his study of the endometrium, has shown that bacteria are almost never found. He further states that chronic endometritis, *per se*, with bacteria present in smears or cultures, is practically to be ruled out as a clinical entity.

Hitschman and Adler concluded that nearly all of the histologic features generally pictured as "Endometritis" present only the physiologic changes incident to the normal menstrual cycle.

Leopold's demonstration of the lymphatic circulation of the uterus has been the means of clearly determining that the course of infection from the cervix to the adnexa is an ascending lymphangitis, and not via the uterine cavity and the lumen of the tubes.

We are concerned here chiefly with chronic infections of the cervix, which are most frequently gonorrhoeal in origin. Streptococcic, staphylococcic and colon bacillus infections are not infrequent, but, once the acute attack is over, they rapidly subside and give little further trouble. Chronic cervical infections may date back to a vulvitis in early infancy, and undoubtedly this throws light on many gynecological disturbances seen in virgins. In infants, the exanthemata, protracted diarrhoeas and general debilitating conditions, while in adults, congenital maldevelopments, traumatism caused by dilatation, curettage, and birth injury, are the most important predisposing causes.

Menge estimates "that in adult females ninety per cent. of chronic gonorrhoeal infections are located in the cervix."

Symptoms may vary within a wide range. The predominant symptom is leukorrhoea, thick and muco-purulent in character, which may be so profuse as to require the individual to wear a perineal dressing. Menstrual disturbances, dysmenorrhoea and menorrhagia* may be complained of, accompanied by a sense of weight and discomfort in the pelvis. Sterility is the rule.

The clinical picture of a chronic endocervicitis is typical and plainly evident on inspection. According to the varying degrees of intensity, we see the conical cervix of the nulli para showing an inflammatory area around a small os discharging a thick tenacious mucus, or the multipara with lacerated eroded lips whose surface is studded with cysts and bleeding at the slighest touch.

Pathology.—The pathological process as portrayed varies in extent and degree, according to the virulence of the infection and the resistance of the tissues. As has been stated, the inflammatory cervix is usually described under "Erosion" or "Ulceration." These terms are improper, as they suggest a break in the continuity of its surface epithelium, while such is not the case. As the disease progresses, the squamous vaginal epithelium proliferates over the affected surface, gradually replacing the columnar endocervical epithelium, occluding outlets of the subjacent cervical glands, resulting in retention cysts, which finally penetrate to the vaginal aspect of the cervix as small shot-like elevations, known as "Nabothian follicles," the presence of which is considered pathognomonic of chronic endocervicitis. In one case the process may remain localized in the glands of the cervical mucosa in-

*Read before Section on Gynecology and Obstetrics of District of Columbia Medical Society, November 23, 1921.

definitely, while in another it terminates in an involvement of uterus, tubes and ovaries. In short, we are dealing with a chronic ascending lymphangitis, the primary focus in the cervix, and often resulting in a complete destruction of the reproductive function. Sturmdorf characterizes the cervical mucosa as the tonsil of the uterus.

Consequences.—Most important among the derangements resulting from chronic cervical infections are disturbances of menstruation and fecundation. Sterility is frequently of cervical orgin. When present in women with a conical or ante-flexed cervix or pin hole os, the malformation as such cannot be correctly ascribed as the cause, but may be due to an existing endocervicitis. Reynolds has called attention to the marked spermatocidal effect of the secretion from a diseased cervical mucosa. This is entirely proved by the frequency with which fertility follows the elimination of the infection. Ewing in treating of precancerous lesions affirms that "chronic endocervicitis precedes cancer in the great majority of cases, and the cervical erosion is the most definitely established lesion known to initiate carcinoma of the cervix." Graves regards endocervicitis as one of the most important factors in the genital neuroses, which play such a prominent part in gynecologic disease. Dr. F. W. Langstroth, in a paper read recently before the New York Academy of Medicine, states that, from his experience at the New Jersey State Hospital, he places infections of the cervix second to no other in the causation of systemic and nervous manifestations.

There is abundant proof that adnexal disease has as its primary cause this infection and the remote systemic manifestations are just as possible when we consider the infected cervical mucosa in the same light as infection of teeth or tonsils. The influence of a constant leukorrhoeal discharge often has a disastrous effect on the nervous system of the patient. She feels herself degraded by her condition and her health becomes impaired far out of proportion to the apparent seriousness of the local infection.

Treatment.—In selecting therapeutic methods, the indications for and limitations of them should be based upon their merits from the viewpoint of end results. The patient seeks relief from symptoms, and a procedure that relieves one and has no effect upon or else exaggerates another, cannot be classed as satisfactory.

Palliative measures, such as applications of tincture of iodine, silver nitrate solution, Dakin solution, followed by tampons and douches, may be instituted and will temporarily relieve congestion and discharge. Careful dilatation of the cervical canal to promote drainage often benefits, but the use of the curette is condemned.

The cure of a chronic endocervicitis necessitates the removal of the infected endocervical tissue, and, to achieve this, the procedures at our disposal are limited in number. Amputation of the cervix, devised by Marion Sims in 1861 and practiced extensively since that time, meets the indication for removal of the infected tissue, but should be avoided during the childbearing period. The efficacy of it is questioned by Leonard, who tabulated the end results of cervix amputations from 128 complete post-operative histories in the gynecologic clinic of John Hopkins Hospital, which, as he stated "were quite unexpected and in many ways disappointing." His study showed that ten per cent. of these women suffered from decided augmentation of a pre-existing menorrhagia or dysmenorrhoea. Four-fifths of the women in whom pregnancy might reasonably have been anticipated to follow the operation remained sterile. On the other hand, fifty per cent. of the pregnancies occurring terminated prematurely, while among the few who progressed to full term, even a larger proportion experienced difficult and prolonged labor.

The curative scope of trachelorrhaphy is limited, and, except in those rare cases in which the infection does not extend beyond the original tear, the results are far from satisfactory. Since the publication of Rawls' study on "Uterine Curettage," about three years ago, dilatation and curettage has been discontinued to a great extent, except as a diagnostic procedure, though it still holds a prominent place in the treatment of endocervicitis and so-called endometritis.

The application of the actual cautery to the cervical canal has been advocated by some. It has the advantage of being a simple and easy procedure and, when carefully executed, it undoubtedly has possibilitites, but the writer has not been convinced from the evidence submitted that it relieves sterility, which causes so many of these patients to seek aid. We must also bear in mind the possibility of dystocia

due to the formation of cicatricial tissue following deep cauterization.

Karl Schroeder excised the cervical mucosa separately from the anterior and posterior lip as a transverse wedge and then, folding each lip upon itself, sutured its vaginal margin at or near the internal os. This operation is sound in principle but it is difficult to execute, the difficulty being in successfully suturing the vaginal to the extremely friable endometrial edge.

Sturmdorf in 1916 described a plastic procedure, aiming at the removal of all diseased tissue from the cervix, with preservation of its muscular structure and contour. This consists in a complete enucleation of the entire endocervical mucosa to the internal os in the shape of a cone, and relining the denuded canal with a cylindric cuff of vaginal mucous membrane. Accurate and permanent approximation of flap to stump and the certainity of a patulous canal are obtained.

In a recent personal communication, Doctor Sturmdorf states that of twenty-seven cases treated by this procedure, in which chronic endocervicitis seemed to be the main factor in the production of sterility, twenty-two have borne children. Its influence on pregnancy and labor is nil.

The writer's own experience with the Sturmdorf operation has convinced him that it marks a distinct advance in the treatment of chronic endocervicitis.

THE APPENDICULAR LIVER AND KIDNEY WITH REPORT OF CASES.*

By LEWIS H. SWINDELL, B. S., M. D., Washington, N. C.

Appendicitis is a condition so simple at times, and so difficult, obscure, and treacherous at others, that those who have the keenest intuitive powers are unable to diagnose and prognose ts terminations and complications.

There are some of you, no doubt, who will disagree with me when I say appendicitis is not a medical case, but a surgical case, and will think it queer that I have selected a surgical case to read before a medical section. It is for this reason that I have selected this subject for those of us who at times are too prone to say, when we are called to a case of appendicitis, "Oh, it is only a mild case of appendicitis, may be it will clear up," and to wait until the evil of toxic complications or infectious troubles so gets hold on the patient that surgery is powerless against them. For the gravity of the appendiceal lesions is not always in direct relation to the intensity of the symptoms.

The Appendicular Liver is the name given to the toxi-infection of the liver consecutive to appendicitis.

The masterly description of the appendicular liver, made by the great Dieulafoy, taught us that the organ often suffers in appendicitis patients either from acute alterations in the parenchyma, due to the microbic toxins, or even by the localization in the liver of microbes carried there by appendicular veins and the branches of the portal vein. From its situation, the liver receives the frontal attack of the toxins and microbes, whose virulence has been increased in the closed cavity.

Soon after the onset of appendicitis, the liver may be affected by the toxins which are carried more rapidly than the microbes; a change in the hepatic cells, which deserves the name of toxic hepatitis, is the result. This early toxic hepatitis does not suppurate. Later, during the second or third week of appendicitis, the microbes are carried to the liver and cause a purulent hepatitis. It is, therefore, indispensable to describe separately toxic and purulent hepatitis.

I.—Toxic Hepatitis occurs early and is accompanied by neither hepatic pain nor violent symptoms. The main symptoms are jaundice, choluria, urobilinuria and albuminura.

The main symptom which I wish to describe—toxic jaundice—may appear on the second or third day of attack of appendicitis. It is not often marked, but only a slight yellow tint, more pronounced in conjunctiva and face, and it is only in exceptional cases that it becomes general like true jaundice. The jaundice is not of long duration and quickly disappears after appendectomy. This form of jaundice is sometime the sole evidence of the appendicular toxicity, but most frequently it is associated with albuminuria as a second sign. In patients suffering from appendicitis, we must always look for jaundice and albuminuria, and urine must always be examined for pigment, albumen and casts, because all of these signs, formerly and even now too much neglected, point to the impregnation of the system by the appendicular toxines.

*Read at the meeting of the Medical Society of the State of North Carolina in Winston-Salem, April 25-27, 1922.

II.—Infective Purulent Hepatitis. This toxic hepatitis, as I have said, occurs early and is accompanied neither by hepatic pain nor violent symptoms. Purulent hepatitis, due to infection by the appendicular microbes, is quite different. It appears during the decline or convalescence of appendicitis, and is accompanied by sharp rigors, severe fever, pains in the hypochondrium, rapid increase in size of liver, jaundice, etc.

Case I.—Mr. A. was operated on in Norfolk for acute gangrenous appendicitis. Drainage put in. Patient got along very well for two weeks when he begun to have chills and run a high fever. This continued for about two weeks when a second operation was done, thinking probably there was an abscess which was not draining. At this operation nothing was found. Patient improved and in two weeks got out of hospital and went to Belhaven to recuperate. About one week later patient begun to have chills and rigors the second time, turned jaundiced, liver became enlarged and very painful and tender. He was brought to F. M. Hospital, Washington, N. C. This was about five weeks since his first operation. After entering hospital, on examination, we found liver very much enlarged and very painful and tender. A distinct jaundice extended over whole body. This jaundice persisted, with daily remission of fever, ranging from 103°-105°, for about one week, when patient died. Post-mortem examination confirmed diagnosis. Liver was very large, weighed 100 ounces, surface showed at various points yellowish or brownish projections—consistency of organ was soft, sections of lobe revealed abscesses everywhere, the gland being riddled with them.

Case II.—I was called to a patient December 26, 1921. He gave history of previous attack of appendicitis. I had been to him with two previous attacks of only slight pain in right lower abdomen, no tenderness, no rigidity. I would give him a mild purgative and condition would clear up. This time, December 26, 1921, he had a more severe attack. Temperature was only 100°, pain not severe, but he had a sick, anxious look, was slightly jaundiced. I advised operation and brought him to hospital. An immediate operation was performed and we found a gangrenous appendix. Appendix removed and drainage inserted. Drainage removed in three or four days. Patient got along nicely for two weeks, when he began to run a temperature. Turned slightly jaundiced, liver became enlarged and tender. This jaundice with remission of fever, gastric intolerance and vomiting continued for two weeks when patient died. Post-mortem examination revealed a very large liver, soft in consistency, riddled with multiple abscesses.

This hepatic infection is one of the most terrible complications of appendicitis. Dieulafoy reports only two cases to have recovered from multiple abscess of liver. As a matter of fact, however successful the surgeon may be in solitary abscess, intervention is hopeless in appendicular infection where abscesses of the liver are counted by the dozens.

In appendicitis we must never wait, for we can never know what the future has in store for us. So, therefore, let us never forget that the fatal consequences of appendicitis are by no means always in relation to the intensity of the symptoms.

Appendicular Kidney. *Toxic Nephritis. Appendicular Albuminuria.* Reduced to its simplest terms, toxic appendicular nephritis reveals itself by a single sign, albuminuria. In nearly all severe cases of appendicitis, the effect on the kidneys is at once shown by albuminura. The albumen may appear on the first, second or third day, and is sometimes associated with slight jaundice which also indicates toxic poisoning. Simple albuminuria, which yields after resection of the appendix, is, I repeat, the only symptom of slight appendicular nephritis. In such cases the renal lesion is neither severe nor lasting, and yet we must not trust this apparent benignity, because this simple albuminura, whether it be associated or not with jaundice, is at times the first warning of grave trouble which may end in death

From the clinical point of view, appendicular nephritis does not resemble other known forms of acute nephritis. It is not comparable with scarlatinal or early syphilitic nephritis. Swelling of the face and of the eyelids, acute œdema, dropsy, œdema of lungs, and serous effusion which are seen in other kinds of acute nephritis are not present in appendicular nephritis. Œdema of the eyelids and of the face is absent and, as appendicular nephritis does not show itself as a rule by any visible sign, the diagnosis is by no means evident and, therefore, this variety of nephritis has passed unnoticed.

Albumen, which is often abundant in other forms of acute nephritis, is generally scanty in the appendicular form. On the other hand, granular casts may be found in the urine as early as the second or third day, and are a bad sign. Albumen alone does not make the prognosis of appendicitis absolutely bad, but it is a sign of poisoning and a danger signal. This danger does not come from the nephritis alone: it arises also from the general intoxication of the system,—that is, from appendicæmia.

Jaundice, which indicates the involvement of the liver, is fairly often associated with albuminuria. These two signs generally appear early and together.

Their signification may not be fatal and yet no one can say whether the intoxication will confine itself to slight nephritis or hepatitis, or whether it will end in more extensive lesions such as toxic gastritis, vomito negro, renal or hepatic insufficiency, nervous complications, general poisoning and death.

The history of appendicitis is always deceptive and the poison often accomplishes its work without giving any sign. We see then the errors in the old description of appendicitis as a purely local disease in which the worst complication was peritonitis.

The patient, therefore, does not succumb to the circumscribed peritonitis, but to the appendicular poisoning which precedes the infection. Peritonitis is not the all-important complication in appendicitis: we must take account of the toxic complications which sometimes precede the infectious troubles, and are the more to be feared as surgery is powerless against them.

In closing, let me draw a parallel between the appendicular liver and the appendicular kidney.

I described separately early toxic hepatitis, which is non-suppurative, and infective hepatitis, which occurs later and occupies a prominent place in the history of the appendicular liver. This purulent hepatitis is readily explained, because the infective agents are carried direct from appendix to the liver by the tributaries of the portal vein. It is not so in the case of the appendicular kidney, which can only become infected by a circuitous path; consequently, infective nephritis with abscess of the kidney is relatively very rare, whilst toxic nephritis, especially the slight form, is common.

Correspondence

The Regular Doctor.

Richmond, Va., April 24, 1922.

To The Editor:—

Members of the medical profession are a long-suffering tribe. While there may be occasional frictions and factions among themselves, they too infrequently fail to resent impositions from the outside.

A few weeks ago one of the leading papers of Richmond, in speaking of the doctors who were appointed on the State Medical Board, distinguishing them from the homeopaths and the osteopaths, referred to them as "allopaths." As you know, "there is no such animal" as an allopath. This name was "wished" upon the ordinary garden variety of doctors—the regular medical profession—by the founder of homeopathy, whose disciples practiced medicine according to the creed of "*similia similibus curantur.* The distinguishing feature of an ordinary, or regular, doctor is that he has no scientific creed, and is at perfect liberty to use any remedy or measure that appears to him to be to the best interest of his patient. The moment he begins to designate himself as following any definite creed, in medicine, he becomes a sectarian, and ceases to be a regular doctor. Yet, there are many physicians who will permit themselves to be designated as "allopaths," though an "allopath," according to Winston's Dictionary, is "One who favors or practices a system of medicine which treats disease by inducing an action opposite to that of the disease treated." The designation "allopath" was necessary from the standpoint of the founder of homeopathy, because he insisted upon branding regular doctors with some creed, merely because his followers had a creed.

I feel that every regular doctor should resent this term. Possibly, if the regular medical profession as a whole would take more pains to let the public know what this profession stands for, the legislators would cease to confuse regular doctors with osteopaths, chiropractors, poropothists and drugless healers.

Unless the regular doctor will make known what he stands for, the public has no way of obtaining this information. Certainly, the public will not be accurately informed about

the regular medical profession if the information comes through the sectarians in medicine.

J. Shelton Horsley, M. D.

Secretary's Announcement

Of General Interest.

Two component societies have recently reorganized and are showing renewed interest in professional and organization matters. These are the Nansemond County Society recently reorganized in Suffolk with all of the old members and several new ones, and the Fauquier County Society which comes in with a new name—the Warrenton Medical Society.

Sussex County physicians met recently at Sussex Court House and, after a routine program, elected officers for the ensuing year. It is well to remind both old and new members that membership in the Medical Society of Virginia is worth more than formerly and that they should be on the alert to tell prospective members of these new features. They get the Virginia Medical Monthly, the cost being partly covered in the annual dues of four dollars. We say partly covered because the actual cost of getting out the journal is about six dollars per member per year. Members get Legal Defense when sued for alleged civil malpractice provided they join with the remainder of the society in contributing to the defense fund to the amount of one dollar. Members may have any business proposition or stock selling scheme investigated and reported on without cost. This feature alone has resulted in saving several hundred dollars for members who decided to investigate before investing. The actual expenses of the society amount to about fifteen thousand dollars less than half of which is borne by members.

If your organization is to continue to grow in usefulness and to be better able to protect the interests of its members and to uphold its standards, the business interests of the Virginia Medical Monthly and the Society must be favorably regarded. Our advertisers are selected with great care and you should in all cases give them first consideration. How many of our advertisers do you patronize?

G. H. Winfrey, *Secretary-Treasurer.*

Analyses, Selections, Etc.

The Excretion of Arsenic after Serial Administration of Arsphenamin and Neo-Arsphenamin.

From the Department of Pharmacology and Toxicology, Yale University, Underhill and Davis find, in a series of injections, the total percentage of arsenic excreted in the feces is larger than in the urine. Authors conclude that in the early intervals of the serial treatment with arsphenamin and neo-arsphenamin the arsenic compounds are retained in the body up to a point at which the tissues are saturated with them. When this point has been reached further additions are in large measure quickly eliminated from the body. It appears that the point of saturation is attained at about the fourth injection. (Frank P. Underhill and Stanton H. Davis. *Archives of Dermatology and Syphilology*, January, 1922).

Congenital Syphilis.

Steinert states that the infants of thirty-one women with florid syphilis showed no signs or symptoms of syphilis while they were under observation, except a positive Wassermann reaction sooner or later in forty-four per cent. No treatment had been given seventeen of the women, and twenty-three and five-tenths per cent. of their infants reacted to the Wassermann test, and thirty-three per cent. of the infants of the three women given treatment before the pregnancy, and thirty-six and three-tenths per cent. of the infants of the fourteen treated during the pregnancy. The treatment had presumably sufficed to prevent development of symptoms, but had not been able to prevent the changes in the serum which entailed the positive response. In two in this group the syphilis was a comparatively recent infection. One woman and her infant never showed the least sign of syphilis on repeated examination until the woman gave a positive response at the fifth test, but never afterward. When the infant was a few months old it presented unmistakable signs of congenital syphilis, although both mother and infant were persistently negative to serologic tests. Two other infants also showed the first signs of the disease when several months old. On account of the mother's syphilis, these children had been given an early course of inunctions, but it had not warded off the eruption at the age

of three and five months. (E. Steinert, *Archiv fur Kinderheilkunde*, Stuttgart, September 17, 1921; *Journal A. M. A.* November 12, 1921.)

The Truth About Medicine

During March the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

The Intra Products Co.:
- Sterile Suspension Mercury Salicylate in Cacao Butter.
- Sterile Suspension Mercury Salicylate in Olive Oil.

Meadows Oil and Chemical Corp.:
- Ammonium Ichthyolate-Meadows.

Book Announcements

Book on the Physician Himself from Graduation to Old Age. By D. W. CATHELL, M D. This is the vastly improved **Crowning Edition.** Published by the author. Emerson Hotel, Baltimore, Md. 360 pages. $3 a copy.

Dr. Cathell's thoughts on the "Physician Himself" are sane and most commendable. He raises a high standard for the conduct of the physician. The book should be in the library of every doctor and read by every man when he graduates in medicine, as holding up the high ideal we should follow and giving very good common-sense advice for his conduct in the attainment of success.

Its keen wit and satire are most enjoyable.

J. N. Upshur, M. D.

American Illustrated Medical Dictionary (Dorland). A new and complete Dictionary of terms used in Medicine, Surgery, Dentistry, Pharmacy, Chemistry, Veterinary Science, Nursing, Biology, and kindred branches; with new and elaborate tables. Elventh Edition, revised and enlarged. Edited by W. A. NEWMAN DORLAND, M. D. Large 8vo. of 1,229 pages with 338 illustrations, 141 in colors. Containing over 1,500 new terms. Philadelphia and London. W. B. Saunders Company. 1921. Flexible Leather, $7.00 net; thumb index, $8.00 net.

This dictionary is so well known that it seems only necessary for us to state that it measures up in every way to the claims it makes. It is now brought thoroughly up-to-date and should be the *sine qua non* of every doctor's library. We highly recommend it.

Radium Therapy. By FRANK EDWARD SIMPSON, A. B., M. D., Professor of Dermatology, Chicago Policlinic; Adjunct Clinical Professor of Dermatology, Northwestern University Medical School; Director Frank Edward Simpson Radium Institute, etc., St. Louis. C. V. Mosby Company, 1922. 8vo. 391 pages with 166 original engravings. Cloth. Price, $7.00.

The Place of Version in Obstetrics. By IRVING W. POTTER, M. D., F. A. C. S., Buffalo, New York. Obstetrician-in-Chief, Deaconess Hospital and St. Mary's Maternity Hospital, etc., St. Louis. C. V. Mosby Company. 1922. 8vo. 138 pages with 42 illustrations. Cloth. Price, $5.00.

Practical Organotherapy. The Internal Secretions in General Practice. By HENRY R. HARROWER, M. D., F. R. S. M. (Lond.) Third Edition. Re-written and enlarged. 1922. The Harrower Laboratory. Glendale, California. 8vo. 416 pages. Cloth. Price, $1.00 net.

The Management of the Sick Infant. By LANGLEY PORTER, B. S., M. D., M. R. C. S. (Eng.), L. R. C. P. (Lond.) Professor of Clinical Pediatrics, University of California Medical School; Visiting Physician, San Francisco Children's Hospital; etc., and WILLIAM E. CARTER, M. D., Assistant in Pediatrics and Chief of Our Patient Dept., University of California Medical School. St. Louis. C. V. Mosby Company. 1922. Cloth 8vo. 654 pages with 54 illustrations, mostly original. Price $7.50.

The Healthy Child from Two to Seven. A Handbook for Parents, Nurses and workers for Child Welfare, Containing The Fundamental Principles of Nutrition and Physical Care, including Sections on Child Nature, Training and Education, and Safeguarding the Nervous System during the Preschool Years. By FRANCIS HAMILTON MACCARTHY, M. D., Assistant Professor of Diseases of Children, Boston University. New York. The Macmillan Company. 1922. 12mo. Cloth. Price $1.50.

Practical Infant Feeding. By LEWIS WEBB HILL, M. D., Junior Assistant Physician to the Children's Hospital, Boston; Assistant in Pediatrics, Harvard Medical School. 8vo. 483 pages, illustrated. Philadelphia and London. W. B. Saunders Company. 1922. Cloth $5.00 net.

The Thyroid Gland. Clinics of George W. Crile, M. D., and Associates at the Cleveland Clinic, Ohio. 8vo. 228 pages, with 106 illustrations. Philadelphia and London. W. B. Saunders Company. 1922. Cloth, $5.00 net.

Population of United States.

According to 1920 census statistics, the toal population of the United States was 105,710,620, of which 81,108,161 were native white and 13,712,754 foreign born white The bulk of these foreign born are located in the cities, there being only 3,355,771 reported as being in rural districts.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA. PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance. Single Copies 20c.

Vol. 49 May, 1922 No. 2

Editorial

Practical Considerations in Hydrothorax of Cardiac Origin.

One who has occasion to observe cases of heart disease may well expect to be brought face to face with dropsical phenomena. Serous accumulations may take place in the pericardial, the pleural and the peritoneal cavity; besides, dropsical symptoms may occur in the skin and lungs. In the case of general dropsy involving the cavities and the body generally, it is an obvious evidence of complete heart decompensation, but when cases of heart disease are rather free from evidence of general dropsy and where the peritoneal cavity and pericardium show no signs of serous accumulation, it is no easy task always to detect hydrops of the thorax. This is particularly true where such hydrothorax is bilateral and associated with conditions of the kidneys or lungs which are, alone, enough to explain the presence of that most distressing symptom, dyspnea.

It is right, however, to observe that the presence of hydrothorax in heart disease is frequently over-looked and that the serious impairment to the lungs, as well as the grave oppression upon the lesser circulation and the heart itself, is often allowed to go for days, and sometimes for weeks, unobserved and unrelieved. Such a case was recently referred to the writer by a fellow practioner, who had inherited the case from another practitioner. Be it said to the credit of the latter that he visited the young man only twice and recognized the real condition. Examination showed a rheumatic heart in a lad of eighteen years. Decompensaton had long since occurred and for weeks on end the patient had been suffering with difficult breathing, and for quite a long time had been unable to go to bed, but had been sitting day and night in a chair. Inspection, percussion and auscultation disclosed an evident hydrothorax and a patient in extremis. Aspiration and slow withdrawal of fluid gave only temporary relief; the patient died. For days no discovery had been made of this hydrothorax and the shortness of breath was taken to be "a sign of heart disease."

Only on a recent trip out of town in consultation with a physician concerning his wife, who had been in bed sick for six weeks with heart disease and who was suffering without much improvement in her condition, from shortness of breath, and whose systolic blood pressure was 180 mm. Hg., but whose urinary findings were reported negative, it was easy to demonstrate a rather marked hydrothorax on the left side. This was probably the prominent cause of the persistent dyspnea.

Nature and Mechanism.

Hydrothorax is a term used to denote the presence of a clear serous fluid accumulation in the pleural cavity. Not being of inflammatory origin, it is usually clear and transudes from pleural walls as the result of obstruction in the flow of venous blood. It is found in chronic valvular heart disease, in myocarditis, nephritis, thoracic aneurism, cirrhosis of the liver, or an hydremic condition of the blood. It is not accompanied by the usual signs of pleursy with effusion except in the likeness of the late signs of dulness and absence or diminution of breath and vocal sounds. The pleura is not thickened; there are no friction sounds, as in pleurisy. The neprhitic hydrothorax is usually bilateral but in these cases the decompensating heart is often associated and may be the cause of a unilateral hydrothorax. It is very difficult to explain why hydrothorax occurs in some cases and not in others. In heart cases the right sided accumulation is most common, particularly in the first stage of hydrothorax. But it is often seen to occur in the right side and only in that side for weeks, but after aspiration and aspiration of the right it has be-

come necessary to aspirate the left pleura; in one case. there was need for aspiration of the right and left side on alternate days for weeks, in the late stage of the cardiac decompensation: in this case aspiration of the pleural cavities was done one hundred times.

The mechanical explanation of hydrothorax is yet unsettled. Some hold that it is brought about by the pressure of the dilated right heart upon the azygos vein. This is combated by Fetterolf and Landis who state that (1) only two-thirds of the pleural membrane is drained by the azygos vein; (2) anastomosis of the azygos veins is numerous and rich; (3) azygos minor emptying into the azygos major is subject to the same influences and so would produce a bilateral hydrops: heart cannot anatomically exert pressure upon the azygos major vein alone.

These authors* believe that it is due to the compressure of the pulmonary veins at the root of the lungs. The confirmation of this is found in the statement of Miller that "the capillary net work into which the branchial artery breaks up in the visceral pleural gives rise to radicles which join the pulmonary veins." The dilatation of the right auricle upon the pulmonary vein is the explanation of right-sided hydrothorax, while the same explanation is given for left-sided effusion by the dilatation of left auricle and ventricle compressing the left pulmonary veins.

The removal of the fluid is usually followed by a relief of the symptoms and re-expansion of the lungs. But recently, in case under observation, the lungs were collapsed and no relief was obtained by aspiration, although it was done as soon as evidence was sufficient. The patient was a diabetic of long standing and this was accepted as the explanation of the failure of the lungs to expand after the removal of the fluid.

Signs.

Occurring as complications of a chronic illness, hydrothorax must be considered a grave condition. The outstanding symptom is dyspnea. But dyspnea is also the outstanding symptom of other conditions and so, in all chronic heart and nephritic cases, it should be the rule of clinicians to repeatedly make examinations of the chest in the presence of dyspnea with the thought in mind of determining the presence or absence of accumulation of dropsical fluid in the chest. Inspection of the lateral walls of the chest and the percussion for dullness and the palpation for diminished fremitus, auscultation for diminished breath and vocal sounds, enter very decidely into the question of diagnosis. The x-ray may be resorted to in case a confirmatory examination is needed. But usually, a small needle introduced on the axillary line about the 6th interspace will clear up the whole matter.

*Diseases of the Chest: Norris Landis, Second Edition, pages 614 Ex. Cet.

News Notes

Recent Legislation in Virginia.

The U. S. Children's Bureau reports that the following bills proposed by the Children's Code Commission of Virginia were passed by the General Assembly:

1st. The Bill providing for changing the name of the State Board of Charities and Corrections to State Board of Public Welfare, making that Board the State Board of Children's Guardians, creating within that board a children's bureau, and providing for the establishment of local boards of public welfare in each county of the State, was passed in substantially the form in which it was presented. The plan of organization is modeled after the North Carolina system.

2nd. Juvenile Court Bills. The juvenile court procedure bill provides for chancery proceedings, instead of the old semi-criminal procedure, which has previously existed. A new bill extends the juvenile and domestic relation courts system to the counties of the State, giving these courts practically the same jurisdiction now exercised by such courts in cities. The plan is to have a special Justice of the Peace appointed by the Judge of the Circuit Court. It is thought that by having the local board of public welfare advise with the Judge in the selection of the person for this position, a man or a woman of a very high type can be secured.

3rd. A group of bills providing for (a) public relief for children in their own homes to be administered by the local boards of public welfare; (b) regulating child-placing and child-caring institutions and agencies; (c) regulating maternity hospitals; (d) regulating boarding houses and nurseries for children under six years of age. No State appro-

priation was made for the operation of the mother's aid law.

4th. A new child labor bill, which is a decided improvement over the existing law, was adopted. It still retains, however, the exception, permitting children between the ages of twelve and sixteen to work in fruit and vegetable canning factories during the summer vacation.

5th. A new compulsory school attendance law requiring children between the ages of eight and fourteen to attend school. The original bill was very much cut to pieces, but, as finally passed, the law is a slight improvement over the existing statute.

A number of other minor measures were passed, making a total of eighteen out of twenty-eight bills. The laws will soon be printed in pamphlet form.

Among bills which have been signed by the Governor is House Bill No. 354, which "adds a clinic of doctors and nurses to bureau of tuberculosis education of State Board of Health, appropriating $15,000 for 1922 and the same for 1923."

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its semi-annual meeting in Roanoke, April 13, under the presidency of Dr. W. F. Mercer, of Richmond. The papers included a symposium on Corneal Ulcer, which was handled by Drs. James Morrison, of Lynchburg, and Emory Hill, of Richmond. Drs. George Mackenzie, of Philadelphia, and John R. Page, of New York City, read papers as invited guests. The rest of the program included interesting papers by Drs. J. A. White, Clifton M. Miller and John Dunn, of Richmond; W. E. Driver, of Norfolk; Geo. M. Maxwell and E. G. Gill, of Roanoke.

The meeting was the most successful that this Society has ever held. Dr. E. G. Gill, of Roanoke, is vice-president, and Dr. J. R. Gorman, of Lynchburg, secretary-treasurer.

J. R. Gorman, *Sec'y-Treas.*

The Sussex County (Va.) Medical Society

Held its regular meeting for the election of officers on April 13, at which time the following were elected for the ensuing year: President, Dr. T. M. Raines, Wakefield; vice-president, Dr. J. F. Slade, Stony Creek; secretary-treasurer, Dr. C. P. Neblett, Waverly.

St. Louis Meeting of A. M. A.

The local entertainment committee, under the chairmanship of Dr. C. E. Burford, have been busy preparing to show visitors to the Americal Medical Association the hospitality for which St. Louis is so famous, and are arranging diversons which will be restful and entertaining.

The Annual Golf Tournament will commence on Monday, May 22.

On Tuesday evening the opening meeting will be held in the Odean and arrangements are being made to have the music and addresses transmitted by radio to various parts of the city and to distant cities.

Wednesday evening is given over to banquets, such as Alumni, Fraternal, Sectional, etc. On this evening the visiting ladies and those doctors who are not engaged at the dinners will be entertained at one of St. Louis' noted moving picture shows, with special music and other features.

On Thursday afternoon, the Medical Department of Washington University is giving a special tea on the grounds of the institution and that evening will be given over entirely to the President's reception, to which are invited all of the doctors and their ladies.

The chief entertainment feature has been reserved for Friday evening and it is hoped that every visitor will remain in St. Louis for this evening. A special program will be given for the entire association in the unique open air Municipal Opera, whch has a comfortable seating capacity of 10,000. The location is in the heart of Forest Park, with its special lighting effect made possible by the natural foliage of the forest, which can be appreciated only by those who visit it at night.

The Ladies' Entertainment Committee, under the leadership of Mrs. Willard Bartlett, has arranged to take charge of every lady visitor who may accompany the doctors and practically every hour of their time has been arranged for.

All members of the Association are urgently requested to attend this meeting and bring the ladies of their families with them.

Dr. Brown Completely Vindicated.

The special board of directors of the Eastern State Hospital, at Williamsburg, Va., have completed their investigation of the charges preferred against Dr. George W. Brown, superintendent, and the management

of the institution, by Charles W. Bowcok, an employee, and Dr. H. U. Stephenson, Toano, the chairman, announces that not a single one of the long list was sustained. Mr. Bowcok, who came from Newport News, where he was employed in the local shipyard, charged the hospital authorities with having mistreated the inmates, and also with general mismanagement. He was a night watchman and was later discharged for an infraction of the rules.

The Board investigated every charge. Most were of a trivial nature, telling of various things which had gone wrong, all of which Dr. Stephenson said might have been admitted and still not have reflected upon Dr. Brown or the management.

The vindication of Dr. Brown was complete, the board expressing every confidence in his management which it regards as exceptionally fine.

U. Va. Chapter, Alpha Omega Alpha Society, Takes in Many Members.

On the night of April 12th, the University of Virginia Chapter of the Honorary Medical Society, Alpha Omega Alpha, conducted public initiation ceremonies in the auditorium of Madison Hall. Dr. Henry A. Christian, Hersey Professor of Medicine at the Harvard University Medical School, gave the principal address of the occasion. The following medical students were taken into the Society: from the fourth-year class, Charles Calhoun Hedges, Marietta, Ga., Charles Bruce Morton, Alexandria, Va., Albert Austin Pearre, Frederick, Md.; from the third-year class, Monroe Jacob Epting, Jr., Savannah, Ga., Robert Battaile Hiden, Pungoteague, Va., Caldwell Jackson Stuart, Washington, Va. From among the medical alumni the following doctors were initiated: Joseph H. Abraham, New York City, John F. Anderson, New Brunswick, N. J., Pual V. Anderson, Richmond, Va., William D. Anderson, Chattanooga, Tenn., Paul B. Barringer, Charlottesville, Va., Richard P. Bell, Staunton, Va., Micajah Boland, Hampton Roads, Va., W. E. Bray, University, Va., James B. Bullitt, Chapel Hill, N. C., John W. Burke, Washington, D. C., Carter S. Cole, New York City, R. F. Compton, University, Va., J. O. Crider, University of Mississippi, John Staige Davis, University, Va., Robert Hill Davis, St. Louis, Mo., William Patton Fite, Muskogee, Okla., John P. Fletcher, Carlisle, Pa., Wade H. Frost, Baltimore, Md., Henry D. Furniss, New York City, Lucius G. Gage, Charlotte, N. C., Goodlatte B. Gilmore, Norfolk, Va., William H. Goodwin, University, Va., Charles R. Grandy, Norfolk, Va., Lomax Gwathmey, Norfolk, Va., George Tucker Harrison, University, Va., Halstead S. Hedges, Charlottesville, Va., J. Shelton Horsley, Richmond, Va., Alfred P. Jones, Roanoke, Va., Beverly R. Kennon, Norfolk, Va., Southgate Leigh, Norfolk, Va., David R. Lyman, Wallingford, Conn., William D. Macon, Charlottesville, Va., E. M. Magruder, Charlottesville, Va., Charles L. Minor, Asheville, N. C., Harry L. Myers, Norfolk, Va., Col. William O. Owen, Washington, D. C., Thaddeus B. Reeves, Greenville, S. C., Mason Romaine, Petersburg, Va., Lawrence T. Royster, Norfolk, Va., G. B. Setzler, University, Va., Joseph F. Siler, Washington, D. C., D. C. Smith, University, Va., Kyle Bear Steele, New York City, George T. Vaughan, Washington, D. C., J. A. Waddell, University, Va., Carrington Williams, Richmond, Va., Gordon Wilson, Baltimore, Md., Robert H. Wright, Richmond, Va., and Hugh H. Young, Baltimore, Md.

The States and the Federal Maternity Act.

According to State Health Legislation, prepared by the U. S. Public Health Service with the co-operation of the National Health Council, it is announced that thirty-six states have now accepted the provisions of the Federal Act for the promotion of the Welfare and Hygiene of Maternity and Infancy. In eight of these states, the acceptance was by an act of the legislature and in the remainder through proclamation of the Governor. The states which have not yet accepted the act are: California, Louisiana, Maine, Maryland, Massachusetts, Washington, Mississippi, Nevada, New York, Rhode Island and Tennessee. Massachusetts, whose legislature is now in session, definitely turned it down. In New York, while the Federal Maternity aid was rejected, both houses passed on March 17 a bill which provides $130,000 for the protection of the health of mothers, infants and children. The State Department of Health would be charged with the administration of the act, through a Division of Maternity, Infancy and Child Hygiene. Kentucky, South Carolina, Virginia and New Jersey have accepted the act during the recent sessions of their legislatures.

Blue Ridge Sanatorium Has Children's Pavilion.

This sanatorium, located near Charlottesville, Va., is now ready to receive applications for admission to its children's pavilion which will accommodate forty-five children suffering from tuberculosis. This is the first of the Virginia sanatoria to open such a department. Applications for admission should be sent to the Medical Director, Blue Ridge Sanatorium, Charlottesville, Va. Within a few months, work will be started on similar pavilions at Catawba and Piedmont.

A campaign is also being conducted to raise $10,000 for the erection of a chapel at Blue Ridge Sanatorium, so that the 180 patients there may have a place to meet for religious services. About one-third of the amount has already been raised. Dr. Frank B. Stafford one of the assistant physicians, is treasurer of this fund.

Noted Spanish Surgeon Holds Clinic.

Learning that Dr. Ignacio Barraquer, the noted specialist of Barcelona, Spain, was in this country, a committee of Richmond doctors, composed of Drs. J. A. White, John Dunn, R. H. Wright, Emory Hill and Clifton Miller, induced him to come to this city and have a clinic. This was arranged for April 24 and the clinic was held at Memorial Hospital. Dr. Barraquer was assisted by Dr. Francisco Poyales, of Madrid, and they operated on seventeen cases of glaucoma and cataract. His method is "the removal of the film by a vacuum method, which makes use of an electric current through a little suction cup introduced into the eye." Good results have been reported to date.

From Richmond, Dr. Barraquer went to Washington to attend the International Ophthalmological Congress and immediately following this he expected to return home. While in this country he held clinics in New York, Philadelphia and Boston, in addition to the one in Richmond.

Board to Administer the Medical Fellowships.

The National Research Council has appointed a special Board of eminent medical men to administer the National Fellowships in Medicine which the Research Council is able to offer through special gifts to it by the Rockefeller Foundation and General Education Board amounting to $100,000 a year for five years.

The members of the Board are: Victor C. Vaughan, formerly Dean, Medical School, University of Michigan, now Chairman, Division of Medical Sciences, National Research Council; ex-officio, chairman; David L. Edsall, Professor of Medicine and Dean of the Medical School, Harvard University; Joseph Erlanger, Professor of Physiology, School of Medicine, Washington University, St. Louis; G. Carl Huber, Professor of Anatomy and Director of Anatomic Laboratories, University of Michgan; E. O. Jordan, Professor of Bacteriology, University of Chicago; Dean Lewis, Professor of Surgery, Rush Medical School, Chicago; W. G. MacCallum, Professor of Pathology and Bacteriology, Johns Hopkins University; Lafayette Mendel, Professor of Physiological Chemistry, Yale University; and W. W. Palmer, Professor of Medicine, Columbia University, School of Medicine.

The fellowshps are open only to students who have already obtained the degree of M. D. or Ph. D or have equivalent qualifications. Fellows will be appointed for one year with the privilege of applying for reappointment. Applications or requests for special informaton should be made to the Division of Medical Sciences, National Research Council, 1701 Massachusetts Avenue, Washington, D. C.

Two Notable Journals Consolidate.

April 22nd marked the passing of the last of the old independent medical weeklies—the Medical Record. The final issue as a separate publication appeared on that date and announcement was made that the Medical Record had been sold to, and combined with, the New York Medical Journal, which appears semi-monthly.

Throughout the fifty-six years of its service to the profession, the Medical Record has had the same publishers and but two editors. Dr. George F. Shrady guided its course for the first thirty-eight years and was succeeded by his assistant, Dr. Thomas L. Stedman, who has long been dean of American medical editors, and widely esteemed. The famous old firm of William Wood & Company will now devote its energies entirely to the publication of medical books in which service it has been engaged for 118 years.

It is interesting to recall that many of the most important discoveries and developments

in the progress of medicine were first announced to the American profession by the Medical Record. These include Lister's method of antisepsis; Koch's discovery of the tubercle bacillus and that of tuberculin; the employment of cocaine in eye surgery; the Roentgen rays; the discovery of the antitoxin of tetanus and that of diphtheria; Madame Curie's discovery of radium and many others.

The Virginia, Maryland and District of Columbia Medical Society

Will hold its Spring meeting at Warrenton, Va., Wednesday, May 17. Dr. Stephen Harnsberger, of Warrenton, is president and Dr. J. D. Rogers, of Washington, D. C., secretary.

Councilor for Second District.

At a meeting of the delegates from the component societies of the Second Congressional District, held on April 15, 1922, Dr. R. Lloyd Williams, of Norfolk, was elected to fill the unexpired term of Dr. J. J. Miller, deceased, as Councilor of the Medical Society of Virginia from the Second District. Six delegates were present and Dr. Williams' name was the only one placed in nomination.

J. L. Rawls, *Secretary.*

Chiropractors Living Hard.

According to the *Journal of the A. M. A.*, a decision of the Ohio state court of appeals, affirmed by the state supreme court, ruled that chiropractors cannot practice in Ohio unless licensed to do so by the State Medical Board. The U. S. Supreme Court declined to review the decision. The result is the chiropractors who have been practicing in that state without license will now be subjected to vigorous prosecution, unless they secure licenses to practice.

Dr. Elbyrne G. Gill,

Of Roanoke, Va., has been elected president of the University Club of that city.

The American College of Physicians,

At their annual meeting in Minneapolis, elected Dr. James M. Anders, of Phladelphia, president, and Dr. Frank Smithies, of Chicago, secretary.

Dr. George T. Harris,

Of Madison Heights, Va., has been elected vice-president of the Lynchburg, Va., branch of the Alumni Association of the University of Richmond.

Dr. L. S. Foster,

Recently of Norfolk, Va., is now located in Williamsburg, Va.

Dr. and Mrs. R. K. Flannagan

Have returned to their home in this city after a visit to Atlanta, Ga., where they went to attend the marriage of their son Roy K. Flannagan, Jr., and Miss Victoria Iler.

Vitamines Not A Cure-All.

According to *U. S. Public Health Reports*, the present popular tendency to extol vitamines as a "cure-all" may be drawing to a close. It is reported that efforts during the year to discover the unidentified food substance whose absence from the diet causes pellagra have excluded two of the three known vitamines. The search for the missing element is being steadily narrowed.

Should Your Name Be On The Honor Roll?

All ex-service men in Virginia who received decorations, citations or other official recognition for bravery or conspicuous service in the World War, and who have not sent copies of citations and official letters of recommendation to the Virginia War History Commission, Room 9, State Capitol, Richmond, Va., are urged to do so without delay.

The Commission is about to publish the official citation of every Virginian who has furnished the proper credentials. It is very important that ths Distinguished Service List be made complete and if Your name should be on the Honor Roll, see that it gets there by posting a certified copy of your citation to the above address Now.

Norfolk County Medical Society Still Active in Spite of Fire.

In a fire several weeks ago in Taylor Building, Norfolk, Va., the rooms of the Norfolk County Medical Society were damaged but the loss was well covered by insurance. The damage to the Library was neglible, being confined to a few not very valuable volumes. For the present their meetings are being held in the auditorium of the Chamber of Commerce.

Dr. William F. Grigg,

Of this city, received a commission from the Governor as one of the delegates to represent the Commonwealth of Virginia at the tenth annual convention of the U. S. Good Roads' Association, which met in Phoenix, Arizona, April 24-29, 1922.

School Trustees of Richmond.

Drs. W. H. Parker and Clifton M. Miller have been re-elected school trustees from their respective districts, for the city of Richmond.

New City Physician For Lynchburg, Va.

Dr. Percy Harris, of Scottsville, Va., has been appointed City Physician for Lynchburg, Va., and entered upon his duties May 1. He succeeded Dr. Gilbert O. Crank, who resigned to accept a position as resident physician of a coal corporation at Lawton, W. Va.

Dr. M. C. Sycle,

Richmond, has returned home after spending a week in Rochester, N. Y.

High Point, N. C., to Have New T. B. Sanatorium.

A new tuberculosis sanatorium, to cost $100.-000. is to be erected by Guilford County. at High Point, N. C.

Louisiana State Medical Society.

At the annual meetmg of this Society in Alexandria, April 11-14, Dr. P. J. Gelpi, New Orleans, was elected president, and Dr. P. T. Talbot, also of New Orleans, secretary-treasurer.

The American Congress on Internal Medicine,

At its annual meeting recently held at Rochester. Minn., elected the following officers for the ensuing year:—President. Dr. Sydney R. Miller, Baltimore; vice-presidents, Drs. Henry S. Plummer, Rochester, Minn.. and Stuart R. Roberts, Atlanta, Ga.; treasurer, Dr. Clement R. Jones, Pittsburg, Pa.; secretary general, Dr. Frank Smithies, Chicago.

Dr. L. H. Apperson

Has located at 616 Church St., Lynchburg, Va.

Dr. Henry V. Johnston,

Recently of the U. S. Public Service, has resumed his practice at Princess Anne Court House. Va.

Married.

Dr. Benjamin Blanton Dutton, Jr., of Winchester, Va., and Miss Anne Lougheed Carson, of Riverton, Va., April 19.

Dr. Arthur Bryan Carr. of War, W. Va., and Miss Annie Crenshaw Armstrong, of this city, April 20. Dr. Carr graduated from the Medical College of Virginia in 1921.

Miss Gene Gray Heck, niece of Dr. and Mrs. J. Allison Hodges, of this city, who has made her home with them since a small child, and Mr. Marshall Gilliam Munce, formerly of this city. now of York, Pa., May 11.

Dr. William F. Henderson

Returned to his home in Blacksburg. Va., the middle of April, after several weeks spent in Florida.

Pasteur Centennial.

While the whole scientific world is this year commemorating the centennial of the birth of Pasteur, Strasbourg, where he was professor of chemistry at the university, is taking the lead. Strasbourg plans two celebrations—one on the exact centennial, December 27, 1922. and the other, with great ceremony. June 1, 1923. At this latter time an exhibition will be opened, which is planned to demonstrate the progress that has been realized in consequence of Pasteur's discoveries. At this time, also, the Pasteur monument will be unveiled.

Dr. William Branch Porter,

Who has been connected with the staff of Stuart Circle Hospital, Richmond, is leaving shortly to accept a position with Lewis-Gale Hosptal. Roanoke, Va.

Dr. Frank W. Lewis,

Of Morattico, Va., has been appointed county director of the rural community life campaign of Northumberland County.

Dr. and Mrs. H. A. Bullock,

Of this city, motored to Washington, for the Easter holidays.

Eighth District Medical Society of N. C.

At a recent meeting of this society, Dr. Walter F. Cole and Dr. John A. Williams, both of Greensboro, N. C., were elected president and secretary, respectively, for the ensuing year.

The Latin-American Medical Congress

Will be held for the sixth time in Havana, Cuba, in November 1922. There will be fourteen sections and the official language will be Spanish. In connection with the Congress there will be held a National Exhibition of Public Health. All correspondence relative to this Congress should be addressed to Dr. F. M. Fernandez, Prado 105, Havana, Cuba.

The New York Electrotherapeutic Society,

At its recent annual meeting, elected Dr. Victor Cox Pedersen, of that city, president, and Dr. Richard Kovacks, also of New York, secretary.

Dr. Stephenson May Not Leave Virginia.

Dr. H. U. Stephenson, whom it was recently announced intended leaving Toano, Va., to locate in North Carolina, has about made up his mind to remain in Virginia, according to recent advices. He has definitely decided not to accept the position offered him in North Carolina, but has not made up his mind where he will go, should he leave Toano. He is being urged to remain there by a large circle of friends and admirers.

Dr. T. H. Daniel

Has been elected a member of the board of directors of the Rotary Club, of Charlottesville, Va.

Dr. Sherwood Dix,

Formerly of this State but now with the U. S. Public Health Service, has been transferred from Ft. McHenry, Md., to U. S. Veterans' Bureau Hospital No. 72, Helena, Mont.

Fees to be Increased at Johns Hopkins University.

It has been announced that there will be an increase in tuition fees next year at Johns Hopkins University, Baltimore, for its medical department, the summer school, and the college courses for teachers. Tuition fee in the medical school is to be raised from $250 to $300 a year.

Dr. and Mrs. S. E. Weymouth

Have returned to their home at Callao, Va., after a visit to Baltimore, Md.

Doctors on Rotary Committees.

Drs. W. P. Hoy and William F. Drewry have been appointed members of important committees of Petersburg, Va., Rotary Club.

Dr. Robt. P. Kelly,

Lynchburg, Va., has returned home after taking a post-graduate course in Chicago.

State Epileptic Colony to be Enlarged.

Construction will shortly be started at the Virginia Epileptic Colony of a dormitory to accommodate fifty additional women, an appropriation of $42,500 being available for the work. A smilar appropriation will later be available for a dormitory for men. The Colony now has 296 men and 231 women patients, the latter including epileptics and feeble-minded.

University of Kansas to Have New Hospital.

Through legislative appropriation, contributions, and a gift from the city of Rosedale, the site has been purchased for the erection of the first unit of the new hospital of the University of Kansas School of Medicine, at Rosedale. This hospital will have a capacity of 100 beds and will be erected at a cost of $400,000.

Lt. T. O. Summers, U. S. N.,

Who is located with the medical corps in this city, attended the Easter dances at Annapolis.

Dr. Douglas Vander Hoof,

Of this city, was elected president of the Virginia Association of the Johns Hopkins Alumni, at the annual meeting in Richmond in April.

Dr. J. Wyatt Davis,

Who was surgeon with the marines in the West Indies, for fourteen months, has returned to his home in Lynchburg, Va.

Societies Holding Semi-Annual Meetings.

As we go to press, the Southwestern Virginia Medical Society is holding its Spring meeting in Pulaski, under the presidency of Dr. A. B. Greiner, of Rural Retreat. Dr. E. G. Gill, of Roanoke, is secretary of this Society.

The Walter Reed Medical Society is holding its third semi-annual meeting in Williamsburg, under the presidency of Dr. H. A. Tabb, of Gloucester. Dr. L. E. Stubbs, of Newport News, is secretary.

These two societies, representative of the western and eastern sections of Virginia, respectively, both play an important part in the medical activities of the State.

Dr. S. W. Maphis

Returned to his home in Warrenton, Va., early in April, much improved by a two months' rest and medical treatment in Washington and Winchester.

Memorial Tablet to Dr. Sims.

A bronze memorial tablet has been placed in the operating theatre of the Woman's Hospital, of New York City, as a memorial to the late Dr. J. Marion Sims, the inscription stating that he was "Founder of the Woman's Hospital and of Modern Gynecology."

Officers in Sons of Veterans.

At the recent reorganization of R. S. Chew Camp, Sons of Confederate Veterans, in Fredericksburg, Va., Dr. J. N. Barney was elected historian, and Drs. F. C. Pratt, S. L. Scott, C. M. Smith and J. N. Barney, surgeons.

Dr. de Schweinitz Honored.

Under the auspices of the Philadelphia County Medical Society, a testimonial dinner was given last month in honor of Dr. George E. de Schweinitz, President-elect of the American Medical Association, and was attended by more than 500 physicians. Dr. Hobart Amory Hare was toastmaster. In addition to a talk by Dr. de Schweinitz, addresses were made by Dr. Hubert Work, Dr. William C. Braisted, Dr. Ross V. Patterson, Dr. John G. Clark, and Dr. Edward Martin. All physicians attending were enthusiastic in their tributes to Dr. de Schweinitz as "a worthy leader of American medicine."

The S. C. Medical Association,

At its annual session in April, decided to hold its 1923 meeting in Charleston. This will be known as a "home coming" meeting, to celebrate the seventy-fifth anniversary of the founding of the association. Dr. Chas. Fred Williams, of Columbia, was elected president, and Dr. E. A. Hines, of Seneca, was re-elected secretary-treasurer.

The Tennessee State Medical Association,

In annual session in Memphis, last month, elected Dr. Holland M. Tigert, of Nashville, president; Dr. Frank A. Jones, of Memphis, first vice-president; and Dr. Larkin Smith, of Nashville, secretary.

T. B. Rate High in France.

According to figures of the permanent Commission on Tuberculosis, France has a much higher tuberculosis mortality than either Germany or England, and Paris has a higher tuberculosis rate than any other world capital.

The National Society for the Study and Correction of Speech Disorder

Will hold its annual meeting as an allied association with the National Education Association, that meets in Boston, July 3 to 7, 1922. The Society will meet every afternoon during the N. E. A. session. Full information may be obtained of Dr. Walter B. Swift, 110 Bay State Road, Boston.

Dr. and Mrs. Frank Lord,

Of this city, with a party of friends, spent the Easter holidays at Cedar Cliff Camp, on the York River.

Radio Health Talks.

The N. Y. State Department of Health, Albany, N. Y., is giving a series of five-minute health talks, which are being broadcast every Friday evening from the radio station WGY Schenectady, through the co-operation of the General Electric Company. It is intended that these talks shall be of practical value in giving to the public information which will aid in the prevention of disease and the preservation of health.

Physical Defects Among Underweight School Children.

Early in 1922, medical inspectors of the department of health of Detroit completed the physical inspection of 8,887 school children, who were found to be 15% or more underweight. Among these, 6,662, or 74.9%, were found to have one physical defect or more. No oustanding physical defect was found among the remaining 2,225. Defects appearing most frequently were enlarged or infected tonsils and defective teeth.

The Cuban Society of Gastro-Enterology

Was organized in Habana in January and held its first regular meeting March 13. Dr. F. Grande Rossi was elected president, and Dr. F. Solano Ramos secretary.

Dr. George Tucker Harrison,

University, Va., has been elected surgeon of the John Bowie Strange Camp, Confederate Veterans, of Charlottesville, Va.

Dr. and Mrs. F. S. Johns

Have returned to their home in this city, after a visit to Washington, D. C.

Rear Admiral Edward R. Stitt,

Surgeon General of the United States Navy, gave an address before the Richmond Academy of Medicine and Surgery on May 9, his subject being "Food Deficiency in Diseases of the Tropics."

Dr. Robt. T. Glassell,

Who has been at Jewell Ridge, Va., for sometime, has returned to Bowling Green, Va.

U. S. Civil Service Examinations.

The U. S. Civil Service Commission, Wash-

ington, D. C., announces the following examinations and will furnish full information upon request.

On June 7, 1922, for Laboratory Aid in Bacteriology.

Applications will be rated as received until July 31, 1922, for Associate in Clinical Psychiatry and Psychotherapy.

Applications will be rated as received until further notice for: Nurses in the hospitals of the U. S. Veterans' Bureau and the Public Health Service and at Indian schools and agencies; Assistant Medical Officer and Junior Medical Officer in Psychiatry; Laboratorian and Assistant Laboratorian in Bacteriology; Dietitian in Public Health Service; Junior Medical Officer in Indian Service and Coast Geodetic Survey.

Dr. G. G. Painter,

Pulaski, Va., has been on a visit at the home of his son in Emporia, Va.

Wanted.

A good location in Virginia. Address "S. G." care Virginia Medical Monthly. (Adv.)

Location Wanted.

Protestant graduate of Medical College of Virginia in 1907, aged 40, who has been doing industrial work since graduation, wants a location in Virginia, in some good small town. Must be in a good community, with good schools and good roads. Will not object to doing some rural work on good roads and among a good class of people. Available about September 1st. Address this journal, No. 154. (Adv.)

For Sale.

Village and country practice, no competition, good school, churches, bank, good roads, good people, good pay, and a beautiful residence adjoining the grounds of a summer resort. Located between Bluefield, W. Va., and East Radford, Va. The best section of Virginia. Price $9,000; cash payment of $5,000 with balance on terms, if desired. Address "C. W.", care ths journal. (Adv.)

Obituary

Dr. Charles U. Gravatt,

Of Port Royal, Va., a prominent physician of Caroline County, and for twelve years a member of the State Senate, died April 14, after an illness which extended over a month. Funeral services, were held at Holy Trinity Church, this city, of which his brother is rector, after which the body was taken to Port Royal for burial.

Dr. Gravatt was born in Caroline County 71 years ago. He graduated from the College of Physicians and Surgeons, Baltimore, in 1870, after which he served for a long period in the U. S. Navy, being medical director of Admiral Sampson's fleet at Santiago, with the rank of rear-admiral. Upon retiring from the service, he resumed practice in Caroline and adjacent counties. He was highly esteemed by his colleagues in the General Assembly and was particularly active in matters pertaining to a better highway system, improved schools and health measures. Every office in the Capitol was represented in the large number of State officers who attended the funeral to pay tribute to Dr. Gravatt. He is survived by a son, two brothers and a sister.

Dr. Thaddeus N. Kabler,

Father of Dr. N. L. Kabler, of Forest Depot, Va., died April 28, at the age of 94 years. For more than fifty years he was a practicing physician at Bedford Springs, Va.

Dr. Kemp Plummer Battle,

Of Raleigh, N. C., prominent specialist in diseases of the eye, ear, throat and nose, died March 23, at Philadelphia, following a long illness. He was 63 years of age and graduated in medicine from the University of Virginia in 1881, and from Bellevue Hospital Medical College, New York, in 1882. He was an honorary member of the Medical Society of the State of North Carolina, a member of the State Medical Examining Board of North Carolina, and prominently identified with medical interests in that State.

Fifty-third Annual Session, Norfolk, Va., October, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 3.
WHOLE NO. 840

RICHMOND, VA., JUNE, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

WORK OF THE STATE BOARD OF HEALTH

By ENNION G. WILLIAMS, M. D., Richmond, Va.
State Health Commissioner.

In the first place I wish to thank you for the privilege of appearing before your Society to tell you about the work of the State Board of Health. We believe that the State Board of Health and the medical profession should maintain a close relationship. Public health work should be regarded as a specialty of medicine. All medical specialties have grown and developed in recent years and the specialty of public health has been no exception to this rule. Its development has been limited practically to this generation, although its beginning may be placed in the generation preceding us. In that generation, little was known concerning the cause and prevention of disease. As the result of discoveries in our time, this has become the best understood branch of medicine.

Boards of health were first organized not so much to prevent diseases as to check epidemics after they had started. The functions were limited virtually to epidemics of smallpox, typhus fever, cholera and yellow fever. As epidemics occurred at more or less long intervals, no officer of the board was expected to devote his full time to the work. It was expected that the work of a board would be done by practitioners of medicine. During the seventies, threats of Asiatic cholera, typhus fever and yellow fever caused many States and cities to organize boards of health. During the eighties, Louis Pasteur announced his wonderful discoveries of the relationship of the microscopic organisms to disease. During the nineties further discoveries were announced. Active discussions took place in regard to the merits and values of these discoveries.

In the first decade of the twentieth century this knowledge was being put into actual practice. Gorgas, by his work at Panama, awakened the world to the possibility of these discoveries. It was then that many States and cities of the Union re-organized their boards of health to take advantage of the new knowledge. The State of Virginia was one of the first States to reorganize its health board along modern lines. This was done by the Legislature in 1908 and the new law went into operation in July of that year.

Upon assuming the responsibilities of the Executive Officer, I visited several of the other States to see what their health departments were doing. I was surprised and disappointed to find how variously they were organized and what little uniformity there was in the work. My conclusion was that all were in the pioneer stage and that each had to work out its own problems.

The original force of the State Board of Health consisted of the Commissioner, an Assistant Commissioner, a Bacteriologist, and one clerk.

Laboratory.

In order to get promptly in touch with the doctors of the State and to give them some tangible benefit, the laboratory was organized. There has been a steadily increasing appreciation of the services rendered by the laboratory. In the first year 3,480 examinations were made, and in the last year 20,000. The examinations carried on at the laboratory include bacteriological and chemical examinations of water, diagnostic examinations for diphtheria, typhoid, tuberculosis, malaria, intestinal parasites, syphilis, gonorrhea, meningitis, etc.

Educational Publicity.

From the very start it was realized that education and publicity work should be one of the

*Read before the Southwestern Virginia Medical Society at Pulaski, May 10, 1922.

most important activities of the State Board of Health. The best way to secure general results is to let the people know what are the causes of diseases and how these diseases may be prevented. Health work cannot be effectively conducted solely through the enforcement of laws and regulations. While the prevention of certain diseases may be effected by community effort through the enforcement of laws, the causes of diseases and the methods of their transmission are frequently too closely related to the personal habits of individuals to be regulated by laws. Furthermore, it is not always possible to enforce measures merely because they are laws; people must believe in the wisdom of such regulations before they will submit to them.

The need for education is even more deeply rooted. It is impossible to obtain the needed laws or secure money for their enforcement until the legislative bodies understand them and believe in them. So, if our task were only to reach the legislature, this educative work would be necessary; for, while representatives are more or less responsive to the will of the people, they will not usually pass acts when they are uncertain of the wisdom lying behind the effort. We have published popular bulletins on virtually every important phase of health work in Virginia; and these have been widely distributed. All members of our staff have devoted much of their attention to giving of health lectures and addresses. Many of these have been illustrated by stereopticon slides; some of them are now being illustrated by motion pictures. We have found that these are excellent methods of entertaining and instructing audiences. To an extent, we have utilized the poster methods. Along four thousand miles of Virginia highways we have tacked metal signs, each emphasizing some health principle, while in every school room in the State there has been placed a placard carrying two simple rules which, if followed, would go a long way toward preventing a group of diseases that we have been ineffectively attempting to prevent through quarantine.

Rural Sanitation.

It early became evident that public health in a territory like Virginia's, with its mild climate and long outdoor season, would have to be concerned largely with typhoid fever and other filth-born diseases including intestinal parasites. This group of diseases offers an excellent field for health work since it must be apparent that illnesses which are caused by the eating or drinking of human filth can be reduced or even eliminated when such filth is so disposed of as to be inaccessible either to water supplies or to insects that might carry it to human beings. Our work in that line has been confined principally to the rural sections, for the cities have taken care of their own problems.

In 1910 we organized the Bureau of Rural Sanitation. Dr. Charles Waddill Stiles, of the U. S. P. H. S., had demonstrated the prevalence of hookworm disease in the Southern States; and Mr. Rockefeller contributed a million dollars to help the States afflicted with that trouble. Virginia shared in this gift. To give an idea of the necessity for this sanitary work, we may take the results of a survey made in rural Virginia. Twelve thousand premises were inspected. Thirty-nine per cent of the homes had no toilet arrangements of any kind—no method of disposing of filth. Less than one per cent had arrangements that properly could be called sanitary; that is, less than one per cent were so equipped that human filth could be disposed without endangering the source of drinking water and without being accessible to flies. Our work began with this survey. What had preceded was mere foundation work; but after the survey we went ahead directly at controlling this most serious problem. We inaugurated short campaigns, a few weeks of intensive work in many counties of the State. They were directed primarily at hookworm disease.

In 1919 we started a policy, which has proved gratifyingly popular. The State, the U. S. Public Health Service, and the county co-operate to maintain a sanitary officer who devotes his entire time to securing better sanitation for the county. This we regard as the most important first step in health work.

In co-operation with the International Health Board, the State also aids counties in the establishment and operation of full time health organizations which devote much of their energies to the solving of the sanitary problem. (A more extended explanation of these co-operative plans will be given later in this paper.)

I cannot, however, leave this subject with mere generalities. We have had convincing proof of the value of our work in this line. For the year ending October 1, 1909, our sickness record for typhoid, a typical disease of the group, showed an estimated total of 14,-

398 cases. Using the same basis for estimate, our record for the year ending October 1, 1920, was 2,493 cases. Unfortunately, we have not available the mortality tables for the same period, since our Bureau of Vital Statistics was not organized until 1920; but the typhoid death record of 1913 was 709, and the record for 1920 was 260.

Morbidity Statistics.

One of the first measures was to determine as far as possible the number and distribution of the cases of communicable diseases in the State. This was begun by sending every month to every doctor a return post card on which the doctor was requested to give the number of cases of certain diseases. This system is not ideal; it may not be the best, but it has seemed the most practicable. It tells us approximately the number and distribution of the cases and enables us through the doctors to concentrate attention in certain communities, particularly when epidemics occur. We would like to improve this system by getting the names and addresses of the patients, or households.

Biological Products.

Soon after the reorganization of the State Board of Health, it became apparent that a number of deaths from diphtheria were due to the inaccessibility of diphtheria antitoxin. The high retail price put it beyond the reach of many poor people.

The State Board of Health was able during the first year to make arrangements with the manufacturers to sell antitoxin and other biological products through the State Board of Health at a price of about one-third of the prevailing retail prices. Other biological products that have been made available in the same way are smallpox virus, typhoid vaccine, whooping cough vaccine, tetanus antitoxin, rabies vaccine and antimeningococcus serum. These prices now are so low as to be within reach of practically every one. For indigent cases, most city councils or boards of supervisors will bear the cost in order to save a life. More recently, we have been able to make antitoxin still more available by offering to physicians a small amount of antitoxin to be kept on hand and paid for when used, the only other condition being that the physician will carry it in his medicine bag. A physician recently told me that this plan, he was sure, had been the means of saving a life in his practice; that he was called a long distance to see a patient and upon arriving found the patient was beginning with an attack of laryngeal diphtheria; and that, by having antitoxin in his medicine case, he was able to check the progress of the disease; whereas the many hours that would have elapsed for him to have gotten antitoxin from the nearest store or distributing station would probably have permitted the laryngeal case to have progressed too far to be checked.

Tuberculosis Sanatoria.

At the time the State Board of Health was organized, the Legislature directed it to establish a sanatorium. In July, 1909, Catawba Sanatorium was opened with a capacity of sixteen patients. This has been gradually increased until now it has a capacity of three hundred patients.

In 1914 Piedmont Sanatorium was opened for colored tuberculosis patients, and that now has a capacity of 100. On account of the great need for sanatorium treatment, a second sanatorium was authorized in 1918. This resulted in the establishment of Blue Ridge Sanatorium, near Charlottesville, which can at the present time accommodate 160 patients. Because of the large number of consumptives in the State, approximately 130,000, it is realized that the sanatoria can only help a small proportion of the victims. They must, therefore, be used for demonstration and educational purposes. All patients who go to a sanatorium are instructed how to take care of themselves and what measures to take to keep from infecting others. After a patient has been at a sanatorium for several months and started on the road to recovery, he can then return to his home and others can be treated.

To reach the many victims who cannot go to a State Sanatorium, the State Board of Health now conducts tuberculosis clinics throughout the State, having a specialist in tuberculosis conduct these clinics in co-operation with local doctors. We have been delighted to see the success with which these clinics have met. The doctors have cordially welcomed this specialist and have not only attended and co-operated in the clinics, but have had our specialist consult with them in a number of their private cases. No fee is charged by the specialist for these consulting services.

Sanitary Engineering.

In the fall of 1910 the State Board of Health was able to organize the Bureau of Sanitary

Engineering and to engage the services of a sanitary engineer for his whole time. Generally speaking, the functions of the Bureau were first to make a systematic investigation of all the public water supplies in the State and also the methods of sewage disposal, and, second, to consult and advise with local authorities in order to make improvements in the water and sewage systems. The Legislature of 1916 increased the authority of the State Board of Health by providing for the issuance of permits of the State Board of Health for new and enlarged water works and prohibiting the installation of such works except with the consent of the Board. Provision was also made for such changes in existing systems of water supplies as were necessary to protect the health of water users. As a result of this Act, there has been a steady improvement in the 180 public water supplies of the State. Samples from all the water supplies are regularly examined. It is interesting to note that last year was the first year during which no epidemic of typhoid fever could be traced to a public water supply in Virginia. About one-third of the people of the State drink water from these public supplies and their improvement and protection has been a large factor in the reduction of typhoid fever and in lowering the general death rate of Virginia.

Vital Statistics.

The Legislature of 1912 passed an Act requiring the registration of births and deaths. During the past year 66,010 births were recorded and 30,652 deaths. This gives a death rate of 13.27 for the State. Among the interesting features shown by the Vital Statistics Bureau has been the decline in deaths from typhoid fever of 709 in 1913 to 260 in 1920; from malaria of 152 in 1913 to 51 in 1920; from diphtheria of 374 in 1915 to 216 in 1918, 334 in 1920. It is difficult to explain why diphtheria should have increased in 1920, but this seems to have been common throughout the whole country. This Bureau also records the number of marriages and divorces in this State. There were 49,502 marriages recorded in 1920. The number of divorces in this State in 1920 were 7,280. This is a great increase over the divorces in 1918, when there were 4,798 recorded. Since the Bureau of Vital Statistics records all births and, therefore, is the only real check we have on midwives, that Bureau has charge of the law which compels the use of nitrate of silver in the eyes of infants. The Bureau distributes the solution free.

Hotel Inspection.

The Legislature of 1910 authorized the inspection of all the hotels in the State having more than ten rooms. Later on the State Board of Health was instructed to inspect all the convict camps. This work has kept one man steadily occupied. At its last session, the General Assembly transferred the inspection of hotels to the Dairy and Food Division of the Department of Agriculture. This was done to prevent a duplication of work, as the Dairy and Food Division was requised to inspect all restaurants, including the restaurants of hotels.

Child Welfare.

In 1914 the State Board of Health was requested to determine the relative physical condition of the children in the rural sections as compared to those in cities. It was thought that the country children were stronger, better physically than the city children, but no survey had been made to determine the conditions. Accordingly, with the help of the International Health Board, an inspection was made of all the school children in one of our counties. The results showed such a high percentage of physical defects that it was thought perhaps the condition of that particular county was unusual. In the following two years, 1915 and 1916, the children in six other counties were inspected. The results were very similar. These inspections, which forecast the results that were later found during the draft for soldiers of the great war, naturally called for some remedial measures. The Legislature of 1916 passed what is known as the West Law, authorizing the inspection of school children and requiring that certain instructions in physical matters be given to teachers and to pupils. The Legislature of 1918 still further strengthened this law requiring the physical inspection of the children by teachers and requiring a certain knowledge of physical inspection and physical education as a prerequisite for a teacher's certificate—these requirements to be subject to the approval of the State Board of Education and the State Board of Health.

To carry out the provision of this Act, courses on these subjects are now given at all the State Normal Schools and in those schools and colleges of the State where prospective teachers are trained. As many of those now

teaching find it impracticable to attend a normal school or college to take this special course required for the teacher's certificate, the State Board of Health is conducting a correspondence course on these subjects. Already more than a thousand teachers have enrolled for it.

The inspections are not medical examinations. At the present time they consist simply of examining the eyes for obvious defects of vision, hearing, the teeth, weight and height. To help solve these school problems, public school nurses were put in.

Mouth Hygiene.

Because of the scarcity of dentists and because of the great need of dental corrections, the State Board of Health requested the State Dental Society to advise the best way to meet the needs. A committee from the State Dental Society made recommendations, which the State Board of Health adopted. A dentist was added to the staff of the State Board of Health. He made a survey of the situation, visited most of the dentists in the State, secured their co-operation and established a number of clinics. Six dentists are now devoting their whole time to these clinics. They go from place to place. These are usually not charity clinics; the people pay, bearing the expense of the clinics. There was also a great need for some plan to have the adenoids and tonsils removed. The State Board of Health has asked the Virginia Society of Oto-Laryngology and Ophthalmology for some practical plan for conducting these clinics. This Society appointed a committee last fall, but has not given us any constructive recommendation, so the State Board of Health has no definite plan for such clinics. They are now being left entirely with the local authorities to make such arrangements as they can to have the children needing the work attended to.

Orthopedic Hospital.

The epidemic of infantile paralysis of 1914 left many little victims that needed orthopedic treatment. Dr. W. T. Graham, the orthopedic surgeon in Richmond, in the winter of 1918 had more than a hundred patients attending a free clinic that he held at his private office. He said that if the State would provide quarters for the cases needing treatment, he would give his services free. The Legislature gave $10,000, and arrangements were made with the Memorial Hospital of Richmond to care for the patients. This appropriation was entirely inadequate to take care of all the patients that applied. To meet this need, the people of Richmond organized an association and raised more than $20,000 to continue the work. The last Legislature supplemented this appropriation by $15,000 additional.

Public Health Nursing.

The inspection of school children showed definitely the need of school nurses, to assist the teacher to make the inspections and particularly to carry on the follow-up work. Furthermore, the scarcity of doctors in the rural sections opened up a field for the nurses. The influenza epidemic also showed the need of some one to teach people how to care for the sick when no trained nurse is available. The public health nursing work promptly took so strong hold upon the people, that at present time there are 178 public health nurses in the State with the following distribution:

City school nurses	33
County school nurses	30
General public health nurses	75
Industrial nurses	17
Child Welfare nurses	6
Clinic nurses	8
Tuberculosis nurses	9

There is a demand for still more.

Let us consider what are the duties of a public health nurse. Her field of usefulness is wide and varied. The public health school nurse in the first place assists the teacher in the inspection of school children. It was at first thought that the nurse alone could conduct the inspection, but we soon concluded that the teacher would better do this. The physical inspection is not a medical examination. Any intelligent teacher can determine whether a child can read what is written on the blackboard, or whether the child is deaf, or has defective teeth, or is underweight. The nurse can give the necessary instructions to the teacher, who thereafter can make these inspections herself, so that the nurse's chief duty is to conduct the follow-up work and persuade the parents to have the defects corrected. As a friendly visitor to the homes of the children, she can explain to the parents the importance of correcting any physical defects and can aid them in having it done. She arranges for clinics when necessary. At clinics arranged for by these nurses last year, the dental defects of nearly 10,000 children

were corrected; at the adenoid clinics more than 600 children have been operated upon. The work of the school nurse, beside its humanitarian aspect, is a matter of school efficiency and economy. Many a child fails on his studies and repeats his grade because of some correctable defect. Many and pathetic are the incidents related by nurses.

One teacher told me that she whipped a boy every day for two weeks for inattention and at the end of that time she found that the boy was deaf. A nurse recently told me of another incident, which I will relate. In the school was a boy whom the children called "Crazy Bill." He was larger and older than the children of his grade. In fact, although he had been going to school for several years, he had never progressed beyond the first grade. He was looked upon as stupid; and the teacher, taking for granted that he was feeble-minded, did not trouble herself with him. A nurse, while inspecting the children, found that his vision was so defective that he could not read what was written on the black board and was totally deaf in one ear. The defective vision was corrected, and the teacher, knowing that he was deaf in one ear, acted accordingly, and the boy after that time made his grades regularly. I could tell you of other similar stories where the correction of physical defects turned the whole current of a child's life. Dr. Brumfield, Resident Physician and Professor of Public Health, at the Virginia Polytechnic Institute, recently told me that a young man in college came up to him and reminded him that some years before Dr. Brumfield had examined him in one of the schools, found that he had hookworm, and relieved him of it; and the young man said that unless he had done so, he would not then have been in college.

Many of the public health nurses combine school work with district nursing work. The school nurses also conduct classes at the high schools in home nursing work, instructing the high school girls and also mothers in the home care of the sick. Some public health nurses devote most of their time to house visitation of the sick, showing members of the family how to carry out the doctor's orders, how to do the many little things that make a patient comfortable—as giving baths, changing bed clothing, taking temperatures, and the many other little things in a sick room that make the difference between comfort and discomfort, and even between life and death to the patient. She can tell the young mother how to carry out the doctor's orders, how to feed, clothe and care for the baby. Many good offices does this friendly visitor with her professional training administer in her daily rounds. She must not make diagnosis or prescribe treatment except in emergencies when it is impossible to secure the services of a doctor.

Since the health department in the City of Richmond put on the infant welfare nurse, the deaths from summer complaint among the infants have been reduced to just about one-half. The nurses find many cases that they refer to the physicians. The nurse from Wythe County, within the last year, has sent eleven children to the Orthopedic Hospital. The nurse in Pulaski County gathered thirty cripples from all parts of the county and had an orthopedic surgeon from a distance to come and examine them. Those needing operative treatment were sent to the hospital. The nurses, by urging suspicious cases to go to a doctor, have located many a victim of tuberculosis in its early stages, thereby enabling the patient to be cured by prompt treatment.

I recall that in one county, where a supervisor was bitterly opposed to appropriating any funds for a nurse, he was later converted. The nurse had found in a school a child with tuberculosis, and had the child sent to a sanatorium where it was cured. The supervisor said that that one instance justified the whole expense of a nurse—the saving the life of that child. Thereafter, that supervisor voted for the nurse. This little incident that influenced the supervisor was but a part of one day's work of that nurse.

Another rapidly developing field for public health nurses is the industrial nursing work. A number of large factories and employers of labor are putting on nurses to care for their employees. One of the large factories in Richmond two years ago put on a nurse to look after the women employees. As a result, before the year was out, the company was so enthusiastic about the work of this nurse that they employed a second one. The chief officer of the company said that a nurse saved his company a great deal of money by increasing the efficiency of the workers and reducing loss of time on account of sickness. The nurse, being on the job all the time, was able to advise with the employees about many of their

minor ills, which, being properly attended to, prevented them from losing time or having more serious illness.

I trust that I have given you some idea of the field of usefulness of the public health nurse. She assists the doctor in relieving the sick and suffering and, in doing so, teaches others how to do the same; she is a friendly visitor in those homes where her advice and help are appreciated; she shows the mother how to care for the baby and to rear her children; she aids in getting removed those handicaps that prevent children from growing and developing; she is a messenger bringing the glad tidings of how sickness can be prevented and health and strength promoted; she is an economic factor in making efficient the work of the laborer and saves money to the schools by preventing loss through absence of the pupils and the consequent repetition of grades. It is no wonder that the services of the public health nurse are in increasing demand, and there is no field of usefulness that offers so great an opportunity for service to their fellow men as that of public health nursing.

Malaria.

We have on our staff a malaria specialist, who devotes all of his time to combating this disease, which is so prevalent in certain sections of Tidewater Virginia. This work is carried on in co-operation with the U. S. P. H. S. and the International Health Board. Any community that will put up funds for this purpose will have this amount matched for conducting the work. A survey of the local situation is first made by a representative of these services, who will determine just what work is necessary to eradicate malaria in a community and what the cost will be. The community is asked to put up half and the other organizations mentioned will put up the other half. In several communities this work has been conducted with wonderful success. After a year's demonstration the work is usually conducted by the local authorities.

State Aid For Local Work.

There are three plans of organization for county health work to which the State gives financial aid. The first is in the employment of a sanitary officer. If the county will put up $1,500 for a sanitary officer, the State will add $1,000. This fund of $2,500 pays a sanitary officer and provides an automobile and other incidental expenses. The sanitary officer is not a doctor, but a layman. His field of service is limited. His main purpose is to have every home protect its water supply and safely dispose of human filth. The following is a program of his work:

1. Make a sanitary survey of the towns in the county; recommend such sanitary ordinances as may be necessary for placing these towns in a sanitary condition; secure passage of same by Town Councils; and give all possible assistance in having such ordinances put into effect and carried through to a conclusion. The above relates principally to the passage of a sanitary privy ordinance and the installation and operation of a system for the sanitary disposal of human excreta in towns.

2. Introduce measures for the provision of sanitary closets and a safe water supply at every school in the county. Secure funds for same, supervise the work of construction and see that it is carried to a successful conclusion.

3. Secure the installation of sanitary closets and safe water supplies at individual homes throughout the county as far as possible. The sanitary officer visits the homes and by personal contact with the people explains the work and convinces them of the benefits to be derived from it. In this way he is able to carry on educational work and secure their voluntary cooperation.

4. The creation of popular interest and sentiment for public health work to the end that the county will desire a more complete health organization for the following year or, at least, continue on the same scale.

5. Cooperate with the county board of health and act as its agent in carrying out measures for the prevention and control of communicable diseases.

The second plan is that the State Board of Health will aid any county in putting in a public health or school nurse to the extent of providing $500 if the county will put up the balance of the cost to support her for one year. The duties of a nurse have already been described. The third plan of cooperation is for the support of a complete health organization to consist of a doctor trained in public health work, who devotes his whole time to the work, a sanitary inspector and a public health nurse and a clerk. This plan is carried on in cooperation with the International Health Board, which shares with the State Board

of Health one-half of the total expense of the county budget, which amounts to from $8,000 to $10,000. A full time organization of this kind is what we would like to see in every county.

In conclusion, permit me to say what has been said many times before. Health is a purchasable commodity. The individual may not be able to assure himself uninterrupted good health; but any community, large or small, can be sure of a low sickness rate, if it will pay the price for the insurance. Good health is an excellent investment; and, while the State Board of Health would not counsel extravagance even for such a splendid cause, it is endeavoring to speed the day when there will be adequate local health organizations in every county of Virginia, being certain that such a development will put our State in the top rank of healthful Commonwealths.

SYPHILIS OF THE INNER EAR AND EIGHTH NERVE.*

By GEORGE W. MACKENZIE, M. D., Philadelphia, Pa.

When our mutual friend, Dr. Clifton Miller, invited me to present a paper before your Society, the invitation was accepted with thanks and at the same time three subjects were offered to him from which he was to select one. He selected the one indicated in the title for the reason, I take it, that he appreciates its importance and perhaps, too, on account of the interest I have shown in the subject in the past. Five years ago when I first prepared a paper on "Syphilis of the Inner Ear and Eighth Nerve," there already existed in the foreign literature a considerable amount of valuable data. Notwithstanding this fact, there seemed to be a general lack of interest manifested in this country, evidenced by the sparsity of the literature on the subject and the conspicuous absence of space given to it in the programs of the various medical societies devoted to otological subjects.

In marked contrast to this state of affairs at home, we find Europeans generally quite interested. At the Tenth International Otological Congress, which is to meet in Paris in July, this particular subject will occupy one-fourth the time and attention of the Convention.

When the Politzer School of Otology began to develop the clinical tests of the labyrinthine functions which made the name of Barany famous, the then recent discoveries were applied merely to the study of cases of Middle Ear Suppuration with Labyrinthine Complications; they did not reckon the greater possibilities that were in store for these tests. At that time, attention was given principally to three observations:—

1st, Spontaneous Nystagmus; 2nd, Afterturning Nystagmus; 3rd, Caloric Nystagmus. Concerning Galvanic Nystagmus, Barany claimed that it was of little practical value. Accordingly, it was lost sight of by every-one but the writer.

Sixteen years of experience (1906-1922) has proved to the satisfaction of everyone who has given the subject of labyrinthine tests more than passing attention that they are, if you include with them the galvanic test, of considerably more value now, and applicable over a wider range of conditions than they were originally thought to be. In spite of the exaggerated claims put forth by a few enthusiasts as to the value of Barany's more recent investigations into the subject of cerebellar localization, which for a time brought some criticism from the neurologists, there is a definite field for the application of the labyrinthine tests, but not exclusive of the functional hearing tests. May I remind you that everyone in the Politzer School was unanimous in his opinion as to the real value of these tests. Of the two, Functional Labyrinthine Tests and Functional Hearing Tests, they placed no more value on the one than on the other. The decision as to the presence of a diffuse labyrinth suppuration and therefore the necessity for operating on the labyrinth was made on the existence of a combined loss of both cochlear and vestibular functions and not on the loss of one alone. It was for those who came along later, with less preparation, to emphasize the importance of the vestibular out of proportion to the cochlear function. As to the field of applicability of the vestibular and cochlear tests, may I remind you that, a diagnosis of neuritis of the eighth nerve is not possible without them; that, the number of cases of eighth nerve neuritis which require the application of these tests are many times greater than those of labyrinthitis including the suppurative form; that, the cases of syphilitic neurolabyrinthitis alone vastly

*Read by invitation at the semi-annual meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, in Roanoke, April 13, 1922.

outnumber the cases of labyrinthitis of pyogenic origin. A mere glance over the field of medicine will convince one of the vast scope of applicability of these tests, concerning which Barany and his associates little dreamt in 1906. It is, therefore, incumbent upon every practising otologist to become familiar with the so-called vestibular tests, and I may add, too, the functional hearing tests.

Syphilitic disease of the labyrinth is not the same condition as syphilitic disease of the eighth nerve extending into the labyrinth. The latter is the condition to which the writer called attention at the 1920 meeting of the A. M. A. and designated neurolabyrinthitis syphilitca. The etiology, pathology and symptomatology of syphilitic neurolabyrinthitis is well known, about which the writer will have little to say at this time since he has already devoted considerable space to the subject recently. He wishes, however, to emphasize briefly some of the most essential features, which are as follows:

I. Syphilis during the secondary and pretertiary stages, when the virus is widespread, produces a picture resembling more or less that of an acute infectious disease. It is during this period that the nervous system is invariably hit more or less severely (neurosyphilis).

II. Syphilitic infants coming to autopsy reveal positive evidence of a meningo-encephalitis. The meningitis follows the trunk of both branches of the eighth nerve, the cochlear branch as a rule being more severely involved than the vestibular. In a few instances the spirochetes and the characteristic syphilitic infiltrations extend to the spinal ganglion and even the intralabyrinthine spaces.

III. During the stage of generalization of syphilis the cerebrospinal fluid presents certain characteristic changes, including a positive Wassermann reaction.

IV. During this stage, the vast majority of patients present the clinical evidence of eighth nerve neuritis, in some cases so pronounced as to be the most discomforting symptoms (deafness and vertigo) complained of by the patient.

V. Syphilitic neurolabyrinthitis is a more or less bilateral affection. The principal subjective disturbances are impairment to hearing of that type which corresponds, according to the functional tuning fork tests, to disease of the perceiving apparatus, to wit: diminution of hearing to all tones, more particularly the higher ones, by air-conduction and diminution of hearing to all tones by bone conduction. The Weber test lateralizes to the better hearing ear.

From the standpoint of the vestibular apparatus there is diminution of function; that is to say, the duration of after-turning nystagmus is shorter than normal and the electrical reaction of the nerve to the galvanic current is diminished. In the case of bilateral neuritis of the vestibular nerve, where one side is hit considerably harder than its fellow, there will be a spontaneous nystagmus directed toward the better functioning side.

The above picture corresponds to a particular type of syphilitic affection of the perceiving apparatus but it is not comprehensive enough to include every clinical case of aural syphilis. The writer wishes to call your attention to another form of aural syphilis which is distinctly different from neurolabyrinthitis. For the sake of convenience in differentiation, we may adopt for it the term labyrinthitis syphilitica tarda, the essential features of which are as follows:

1. It appears late in the course of syphilis more often of the hereditary, rarely of the acquired, form.

2. It is possible that some of these cases may have been affected with neurolabyrinthitis at an earlier period.

3. The eighth nerve seems to escape in this type, for the electrical reactibility of the eighth nerve is retained, a most important differential sign that distinguishes it from neurolabyrinthitis syphilitica.

4. In the tardy form of syphilitic labyrinthitis there is frequently evidence of interstitial keratitis, past or impending.

5. The functional hearing test findings are the same in both forms of aural syphilis. The vestibular tests are the same in the two processes with one important difference. In neurolabyrinthitis the galvanic reaction of the nerve is diminished or lost, whereas in labyrinthitis syphilitica tarda, it is retained.

6. The prognosis under vigorous antiluetic treatment is exceptionally good in cases of neurolabyrinthitis syphilitica, much less favorable in cases of labyrinthitis syphilitica tarda.

The limited time remaining will not permit the writer to report cases now. He will reserve them for another occasion; neither will he discuss at this time primary post-syphilitic eighth nerve atrophy for similar reasons.

1831 *Chestnut Street.*

X-RAY IN DERMATOLOGY.*

By C. AUGUSTUS SIMPSON, M. D., Washington, D. C.
Dermatologist to the Episcopal Eye, Ear and Throat Hospital, Providence Hospital, and the Washington Asylum Hospital; Dermatologist to the Washington City Orphan Asylum and St. Ann's Orphan Asylum.

To William Conrad Roentgen, of Wurxburg, the discoverer of X-ray, the world will pay homage as one of the benefactors of man. Even at this late date, twenty-seven years afterwards, we are daily increasing the usefulness of Roentgen ray, and no one can predict what tomorrow will add to the multiplying lesions relieved and cured by this agent.

The history of Roentgen therapy can be divided roughly into three eras,—optimistic, pessimistic, and realistic. At first, carelessness overcame caution and both patients and physicians were burned horribly. By 1906, the profession and the laity realized that an X-ray machine was a most dangerous apparatus and should be used with the greatest caution. Then followed the era of pessimism which lasted until 1910-12. Few physicians cared to undertake any but the most superficial therapy. During this interval, radiography in America was developing and improving at a wonderful rate while X-ray therapy, because of unreliable dosage, unstable tubes, and dangerously long exposures, remained comparatively undeveloped. Kienbock, Holznecht, and Sabouraud had before this developed radiometers, but X-ray therapy in this country had by now become such a hazardous undertaking that few operators cared to rsik their reputation with any great amount of therapy, and none apparently knew or had any practical experience with the Sabouraud pastile.

In the summer of 1911, while working in Dr. Max Joseph's Skin Clinic of Berlin, I was amazed at the ease and precision with which skin lesions were treated with X-ray, using the Sabouraud radiometer. I knew something of dermatology and had just been an intern in the New York Skin and Cancer Hospital which boasted of a good treatment outfit which had done and was still doing about as much damage to the human anatomy as a working X-ray machine is capable of doing. I was so impressed by the X-ray results in Max Joseph's Clinic that I felt then and ever since that one of my greatest privileges was to have gained early and useful knowledge of X-ray therapy from this good natured old German.

On May 8, 1912, almost ten years ago, I read my first paper on X-ray therapy before this Society, when I demonstrated the Sabouraud pastile and Wehnett Cryptoradiometer. I gave the technique, scheme, and division of an erythematous dose, for the various skin lesions and cancer, employed in Max Joseph's Clinic. This scheme of dividing the erythematous dose of ray into fractions, which experience taught were most suitable and effective with certain skin lesions, has stood the test of time. It is the technique employed by myself and a great majority of the X-ray operators of America today. We in this country had nothing to do with the development of this technique; for certain latter day X-ray men to speak of it as MacKee's, or any other American's, is to make ourselves laughable in the eyes of the foreign dermatologist.

If Roentgen ray has been a boon to surgery and internal medicine, it has been more than that to the specialty of dermatology. It has been the greatest single agency for curing skin lesions that has ever been placed in the hands of the skin specialist. Also, it is the dermatologist who most frequently is called upon to administer this dangerous agent in the most accurate, scientific, and exact dosage. The danger and risk incurred in radiography do not nearly compare to the hazard the dermatologist has to face many times daily when, to get an early result, he comes perilously near an X-ray dermatitis and burn. In treating superficial skin lesions without the use of filters, as he very often must, his dosage, care, and skill will be many times more exact than when he treats a deep or even superficial malignancy. At the same time, it must be evident that accurate dosage of ray will avail nothing or may do harm if the diagnosis is at fault. Many times heavy and dangerous treatments are instituted for a skin lesion which a mere beginner in dermatology knows to be wrong; so that diagnosis, accuracy and results are closely interwoven in X-ray therapy as practiced by the modern dermatologist. One might say that rather than give too large a quantity of ray it would be better to play safe and give a dose that will at least do no harm. Not only will the physician fail to get a result and lose his patient, but he may also be threatened with a suit as the following instance will show. Miss C. C. D.

*Part of Symposium on X-ray read before the District of Columbia Medical Society, April 12, 1922.

(white) was sent me by Dr. Gerry Morgan. She brought her young nephew to consult me for a scalp lesion of two weeks' duration There were discrete, sharply defined, crusted, and weeping lesions, ranging in size from a pea to a lima bean, which covered the scalp and extended behind the left ear and down the same side of the neck. The spread of the lesion was rapid, each beginning as a blister which quickly broke and crusted over. The disease was impetigo and healed completely in two weeks under two per cent. ammoniated mercury ointment. This patient before consulting me was taken to one of the local hospitals where a diagnosis of ringworm was made and the scalp exposed to a large dose of X-ray. The boy's aunt insisted that she was going to enter suit against the doctor for exposing the child to this unnecessary danger. Fortunately for the radiographer, his treatment was as wretched as his diagnosis and he produced no alopecia. Had he produced an X-ray alopecia and at the same time used a local antiseptic, as he should have done in ringworm infection, the impetigo would have been cured and no one would have been the wiser. Here the physician was about to be sued when he had given a small dose of ray. Had he given enough to produce a temporary alopecia his legal case would have been made much worse. Had he over-dosed the patient as much as he underdosed him, just as possible with a faulty technique, that family would have been drawing rations from our college for the next fifteen years.

X-ray therapy today resolves itself into two questions; does the patient really get any ray, or is the machine set in motion to impress the patient. The time is not far distant when some physicians must either give up Roentgen therapy or else devote enough time and energy to the subject to master it. It is another instance of the failure to fool all the people all the time. The same might be said of radium therapy. Today we have accurate methods of measuring the quantity and quality of ray given off from an X-ray tube. The mysterious and hocus-pocus side of the question belongs to yesterday. Today, the science is exact and standardized. There is no doubt that many patients have high frequency current used on them and are told they are getting X-ray. This and other frauds are committed in the name of Roentgen ray right here in Washington, I am sorry to say.

It is as unfair to compare X-ray therapy of ten years ago to modern radiotherapy as it is to liken pre-aseptic surgery to the present science. Discoveries, inventions, and improvements supersede each other with startling rapidity. Tomorrow may bring forward an apparatus that will make hundreds and thousands of dollars' worth of instruments obsolete over night. When I try to recall the changes in equipment since I began this work ten years ago, I wonder if I am working for the manufacturer or myself. The one small machine, with which I proudly began therapy, is now displaced by three separate X-ray mamines, each in a separate room and each double the capacity of my first outfit with which I believe I secured some fair results. In my practice I have become so dependent on the X-ray, and therapy is taking such a large per cent. of my time, that I have had to employ an experienced associate, who will devote his time solely to deep therapy and picture work. In the past, because I limited myself to therapy, I have been compelled to send my patients to a radiographer in case I needed a picture to detect internal metastatic malignancy. I am also of the firm opinion that therapy and picture work have become so technical, complicated, and different that each should be in charge of different operators using separate and special X-ray machines and tubes. If ten short years have wrought these changes, what may we expect in the next ten, when large manufacturing concerns, electric corporations, richly endowed institutions and universities are employing high salaried investigators who are making concerted study and efforts to improve X-ray therapy? I believe we are on the threshold of some wonderful discoveries that will broaden and improve X-ray treatment.

I believe Roentgen sickness will soon be better understoood and eliminated through the study of blood and tissue chemistry. I also feel that many of the future betterments in our speciality will come through closer cooperation between the X-ray and serological laboratories. This I am anticipating by installing modern apparatus under a capable worker from the pathological department of one of the large universities.

Both X-ray and radium are capable of effecting alternations in elementary substances and in simple, complex organic, and inorganic compounds. This chemical change is atomic

and molecular, apparently brought about through the process of ionization. Biochemical action consists mostly of the effects on fatty acids, enzymes, and ferments. Small doses stimulate, large doses inhibit the production of these substances. Protozoa and bacteria are resistant to radiation, according to MacKee the lethal dose being a large one. The beneficial effects of X-ray therapy in skin lesions are not due to the bacteriolytic action of the ray but to the stimulatnig action upon the tissue cells. Polynuclear cells are more readily effected than the mononuclear. Large doses of ray stop reproduction and produce death of the cell. The biological explanation of the effects of X-ray are not thoroughly understood. Packard believes that the radiations act directly on the chromatin and protoplasm, activating enzymes which produce degeneration of the cell proteins. Young, embryonic, undifferentiated and secreting cells are much more radio-sensitive than mature, inactive cells. The well known clinical effects of the ray in varying doses are antipruritic, anaesthetic, keratoplastic and stimulation of cell divison, atrophy and destruction, the last two effects being selective. The brunt of the damage is borne by the lymphatic system and lesions composed of embrylogical and malignant cells. Soft beta rays are more destructive than hard rays.

If you will pardon my enthusiasm for this subject, I will try to explain just how much modern dermatology is dependent on radium and X-ray therapy. To say that all skin lesions or even a majority of them can be cured by these agents is a mistake, but in the common lesions such as acne, pruritus, and certain types of eczema, one is almost entirely dependent on X-ray for a speedy result. In ringworm of the scalp, almost an incurable lesion with the older prescriptions of antiseptic salves and lotions, one treatment produces a cure. Thanks to the X-ray, ringworm is no longer the terrible disease it once was. I do not know if the pediatrician realizes what an economic saving the treatment has produced in this one disease. Thousands of children have returned to schools and association with their friends from which they were exiled. In London and Paris, ringworm schools have been closed and thousands of dollars saved. Simple sycosis is another skin lesion which was almost incurable before we began to use Roentgen ray. It was a common thing to see patients who had suffered from this disease from five to twenty years, all the time going from one dermatologist to another, using vaccines, antiseptics, salves, and lotions in succession. I have cured sycosis of fifteen years' duration with one dose of X-ray. In lichen chronic simplex and lichen planus the results are almost instantaneous, as the following report will show. A widow of a physician, and the mother of a physician, had a patch of lichen chronic simplex on the calf of her leg for 42 years. She had consulted dermatologists, surgeons, and internists, for all of these 42 year, and she had probably used on the lesion every drug known to the profession. One colleague, after trying every antiseptic and healing agent he knew, suggested that she had leprosy and prescribed chaulmoogra oil, with no relief. The lesion was sharply marginated, isolated, indurated, and badly excoriated by her nails. Secondary infection on the skin, which was at least one-fourth of an inch thick, produced a raw, weeping, painful patch the size of a silver dollar, that developed paroxysms of itching that would drive the patient frantic. At times she was all but incapacitated. One exposure of X-ray three years ago healed this lesion, which has remained well ever since. Pruritus of anus and vulva is very often relieved and banished when every other therapeutic agent has failed. I regard many of these lesions as neurodermatitis, closely related to lichen chronic simplex, for which X-ray surpasses every other known therapy. Not so many years ago, our colleagues poked fun at us in not being able to cure acne, the most common skin disease known. Now we know that there is not a single case of acne that cannot be cured, because we can atrophy the sebaceous gland which is infected and hypertrophied in this disease. Occasionally, the Kromayer and Alpine lamps seem superior to X-ray here, but in the usual case I use them in the interval between X-ray exposures solely to quicken the result.

Ordinary primary untreated epitheliomas have ceased to be the cause of concern in dermatological practice; close to 100% of cures are obtained with one to two massive doses of ray. As I said before this Society last year, the modern dermatologist who really is willing to give heavy doses of Roentgen ray undertakes the treatment of an uncomplicated skin cancer with less concern and more confidence than he does the cure of a well developed ec-

zema. Besides these lesions mentioned, many other skin diseases such as favus, blastomycosis, actinomycosis, seborrhea dermatitis, psoriasis, prurigo, granuloma fungoides, leukemia cutis, Hodgkin's disease, the various forms of cutaneous tuberculosis and scrofulodema, lupus, warts, leukoplakia, Kraurosis vulva sarcoma (Kaposi), and Paget's disease, are benefited by Roentgen ray. It many not be the sole, outstanding, single therapeutic agent to employ in many of the less common dermatological lesions, and yet at the same time it may be of inestimable value if used in conjunction with other therapeutic measures, when striving for the relief and cure of our patient. I will repeat that the Roentgen ray has been the greatest single therapeutic asset ever placed in the hands of the dermatologist. *Washington Radium and X-ray Laboratory*, 1610 *Twentieth Street, Northwest.*

RAMBLING REMARKS IN RE APPENDICITIS.*

By STUART McGUIRE, M. D., Richmond, Va.

Appendicitis was first clearly recognized and accurately described by Reginald Fitts, an internist of Boston, in 1886. Before that date the symptoms due to the disease were attributed to gastritis, peritonitis, or inflammation of the bowels. Robert T. Morris said that if a torch was applied to the tomb of every man dying of unrecognized appendicitis the world would be a bon fire. I have often wondered how a condition which was so frequent and fatal could have escaped recognition by clinicians of the past who were justly noted for the accuracy of their observations. The explanation lies in the fact that the symptons of appendicitis, originating in an organ without function, were characterized by reflex disturbance of the function of other and more important organs and hence were misconstrued during the life of the patient. If death ensued and a post mortem was made, the secondary complication so obscured the original lesion that it was overlooked. Dr. H. H. Henkel, of Staunton, told me that, while in New York taking a post graduate course in 1878, he saw a case in the wards of one of the hospitals which was treated first for gastritis, then for peritonitis, and finally for locked bowels. When the patient died, a post mortem was held and the pathologist commented on the fact that the inflammation had been so severe that the appendix vermiformis had sloughed off. Two years later when engaged in private practice, this physician saw another case die with similar symptoms and before making a post mortem he told his colleagues that he was certain that they would find the appendix gangrenous, and such proved to be the case. In neither instance did it occur to any of the physicians that the condition of the appendix was the primary cause of the trouble.

From a surgical standpoint, appendicitis and I are about the same age. Like the rabbit that was born and bred in a briar patch, so I received my earliest professional experience in the midst of a discussion and contention with reference to the cause, diagnosis and treatment of appendicitis, that created as much interest and feeling as did prohibition, woman suffrage, or the recent controversy with reference to the proposed consolidation and location of the two State aided medical schools in Virginia.

At the time of which I speak, the pages of medical journals and the programs of medical societies were almost monopolized by papers on appendicitis, which discussed the influence of age, sex and race, the etiological factor of grape seed and other foreign bodies, the question of whether chronic dyspepsia was a cause or a result of the disease, the possibility of making a definite diagnosis before the development of a mass in the lower right abdomen, whether appendicitis should be regarded primarily as a medical or surgical condition, whether purgatives were beneficial or injurious in the early stages, and finally the indications for operation, and the time at which it should be done. On these and many other points there was great difference of opinion. Murphy, Price, Ochsner and others held joint discussions at the meetings of all National associations that for brilliancy and bitterness have rarely been equaled even in political debate. In Virginia my father, Hunter McGuire, was regarded as a great authority on the subject and in 1892 he published a paper entitled "Seventeen Consecutive Unselected Cases of Appendicitis Operated on with One Death." So great was the local interest in the subject that the Medical Society of Virginia, in order to stimulate study and investigation, offered a cash prize for the best paper presented by one of its members and this was won after a vigorous competition by Dr. E. E.

*Read at the meeting of the Tri-State Medical Association of the Carolinas and Virginia, in Norfolk, Va., February 22-23, 1922.

Feild of Norfolk. The prize essay was published in the Transactions of the Society for 1894 and may be read with profit today. McBurney was the first to advocate the interval operation for appendicitis and to suggest the split muscle incision, now known by his name. He said the method required four assistants and that the work could not be done in less time than one hour.

All this, of course, is ancient history, but it is history that some of us have forgotten and others have not learned. Appendicitis is as frequent today as it ever was, and it is still the cause of many deaths that might be prevented. Most of the problems with reference to its diagnosis and treatment have been solved, but the disease has lost its charm of novelty and I fear the dearly earned experience of the past is not being properly transmitted to medical students or to the new generation of practitioners of medicine.

Recently, in reading the statistics of the operations done at a famous hospital of this country, I was struck with the fact that one-third of all the patients were operated on for appendicitis. I confess that I was astonished at the figures, but an investigation of my own records and an inquiry among certain of my friends showed that practically the proportion was true in Richmond. Surely, a disease so frequent should continue to occupy a large part of our thought and study.

When we come to consider the present mortality of the disease, the results are equally impressive. Certain individual surgeons working under favorable conditions are able to report long series of operations, which include not only chronic but acute cases as well, with a death rate of less than 2%. But this by no means represents the work of the rank and file of the profession. The late lamented John B. Murphy recognized this fact and realized that to arrive at the truth an investigator should not study the records of a few surgeons, but the reports of many hospitals. He, therefore, in 1915 compiled the statistics of the hospitals in the United States that published annual reports, and found that they showed the average mortality rate of appendicitis both acute and chronic was over 10%. When it is remembered that the large majority of these cases were interval operations and that as a rule the hospitals that publish reports are superior to those which do not do so, it is obvious that the mortality of acute appendicitis in the United States today is still very high.

The object of this brief paper is not to discuss the treatment of appendicitis, because it has become standardized with perhaps the single exception of the question whether to operate in the face of an existing and spreading infection or to wait with the hope, sometimes realized but sometimes futile, that there will be a localization of the septic process which will render surgical intervention safer. My object is to emphasize the frequency and fatality of the disease and to urge that it be discussed at our medical meetings and thoroughly taught in our medical schools because, despite all the time and study which has been devoted to it in the past, it continues to cause a large number of preventable deaths. We do not need new facts and theories, but we do need to see that the accepted principles of treatment are universally known and put into practice. Further, publicity is necessary to educate the laity against the administration of purgatives, the family physician on the importance of early diagnosis, and the surgeon on the wisdom of prompt operation.

So much has been written about the unnecessary operations that have been done for appendicitis in the past and so many new diagnostic methods have been introduced to prevent error, that there is a tendency on the part of some surgeons to postpone an operation in a doubtful case until a diagnosis by exclusion can be made. Unnecessary operations are, of course, to be avoided and accuracy of diagnosis to be encouraged. It is admittedly very mortifying to the surgeon if he operates on a case for appendicitis and later finds the patient was suffering from pneumonia, acidosis, pyelitis, or stone in the kidney, but it is disastrous to the patient if he really has appendicitis and the disease is allowed to progress to a hopeless stage while the surgeon is eliminating the possibility of error by x-ray examinations, catheterization of the ureters, and time consuming laboratory tests.

All cases should, of course, have a physical examination of the heart and lungs, a differential blood count and a careful urinalysis. In some cases where there is absence of tenderness or rigidity in the lower right abdomen, a rectal examination or palpation of the loin will show a displaced appendix. These examinations can be completed while the operating room is being prepared and need cause no

delay. If the findings point to appendicitis and the patient's condition is acute I would operate even if the diagnosis was not conclusive. In following this plan I must confess to having made some mistakes but I know I have saved many lives which would otherwise have been sacrificed. An operation in itself carries little risk. If the appendix is innocent the patient will recover and if necessary can be operated on a second time. Better a living mistake than a dead one, although dead men tell no tales and play no part in the reports and statistics of other surgeons.

I wish to make it plain that what I have said applies only to acute appendicitis. Just as I am radical with acute cases, so I am conservative with chronic ones. In acute cases no time should be lost in an attempt to establish a definite diagnosis. In chronic cases no time should be spared to eliminate every possibility of error. The patient's life is not in danger and his restoration to health depends on the location and correction of the cause of his symptoms.

In these cases not only should every possible diagnostic means be exhausted before the operation, but, as a rule, the abdomen should be opened by an incision which will permit of a thorough and complete examination of all its various organs, in order to determine whether the appendix is the real and sole malefactor.

ON THE NATURE AND TREATMENT OF HEMORRHAGIC FEVER.*

By CYRUS THOMPSON, M. D., Jacksonville, N. C.

When I was a callow college lad and academic curricula had more regard for classic sentiment and less for business and the material sciences than our institutions exhibit these latter days, all students who aspired to become educated gentlemen had to study Latin and Greek. To be educated gentlemen then it was necessary, if not to have, at least to have had, a knowledge of these ancient classics. I was, therefore, educated according to the character of my time. I read the orations of our eloquent friend, Marcus Tullius Cicero, whose hatred of Catiline, poor senatorial scoundrel, was no less truculent than the hatred of Demosthenes toward Philip of Macedon. I recall Cicero's Tusculan Disputations. I read laboriously his charming dissertation De Natura Deorum. But I remember nothing very definite about the nature of these forgotten gods. I gathered from my reading, however, that gods, whether Roman, Scandinavian, Hindu or American, resemble their worshipers. Men approach the likeness of the object of their devotion if they comprehend the nature of these objects. Not understanding them, they fashion their gods like unto themselves. Gods, persons and things, in other words, are to us not so much themselves in the absolute as our peculiar selves in fact. With mirrors or without, we are constantly seeing our dear selves—just as the sun, for all the darkness in the universe, sees nothing but his own radiance wherever he lifts his eye.

Pardon these words of philosophic prelude: I am generously trying to justify your mental attitude if you disagree with me in this brief discussion of the "Nature and Treatment of Hemorrhagic Fever."

As to the nature of the malady, I may be wrong when I agree with our neighbors in a South Carolina town, who by way of euphemism and soft impeachment of the health of their community, call it Extreme or Terminal Malaria. As such, however, I have seen it through an experience covering some forty fleeting years. And so it now appears to the vast majority of professional men who have experience with it.

I am aware, of course, that some reputable and observant men see the malady as a distinct non-malarial entity. Quite recently a neighbor of mine held and advocated this view; and some recent textbooks discuss it under the caption of Blackwater Fever, apart from their discussion of malaria. My neighbor's opinion was based upon his own observation. He had seen the malady mainly in communities where, they declared, malaria was not very troublesome and into which the doctor was seldom called to treat malaria.

Admitting his argument as a statement of fact, to me it is rather convincing proof of the malarial nature of Hemorrhagic Fever. Sharply acute attacks of malaria—the severe chill, the high fever, the aching limbs, breaking back and splitting head—these drive the patient to prompt and effective treatment. From this type of malarial attack, little of aftermath is to be expected or feared: its severity makes it benign. In some communities, this type prevails; in others, the type is

*Read before the Medical Society of the State of North Carolina, at Winston-Salem, April 25, 1922.

less acute, and unfortunately too often considered negligible. The attacks are ignored or imperfectly treated. They recur for this reason, and add to their destructive work with every coming. The condition is so made light of, the doctor is not called until the hemoglobinuric culmination of an insidious series of neglected recurrences alarms the patient, when too often the undertaker should be the doctor's chauffeur.

Hemorrhagic fever is as preventable as small-pox. It is a disease not of the careful, but of the careless. I think it may be said without fear of contradiction that hemorrhagic fever (Hemoglobinuric Fever, Blackwater Fever, or Malarial Haemoglobinuria) is never seen as a first attack in a person previously well, but has always behind it a history of repeated neglected or ill-treated outbreaks of malaria. For its development, time and negligence are required. It is never the expression of a new infection. This is true whether the haemoglobinuria occurs in July or in March. Not every such history, of course, eventuates in haemoglobinuria, but whenever haemoglobinuria does come, it comes with such a history always. One severe lesson I derive from this: every attack of malaria is of most serious import, and the mild attacks, it may be, most serious of all. "He that hath ears to hear, let him hear."

Incidentally, I remark that I have never seen a malarial addict with a corn-pone spleen have Hemorrhagic Fever. In all cases, of course, there is enlargement of the spleen; but when I can lift up, so to speak, the heel of the spleen from off the sigmoid flexure, I confidently assure the victim that he will safely enjoy poor health for a very long time.

As to the nature of Hemorrhagic Fever, therefore, what more shall I say? Its nature is the same as the nature of every other malarial manifestation: it is a parasitic destruction of red cells and the liberation of hemoglobin into the blood current. In quality, all malarial attacks are the same: they differ in quantity and in the efficiency of the liver at the time of the outbreak. Every malarial fever, in other words, regardless of its lightness or its gravity, is hemorrhagic. Note the pallor of the face the day following the first chill; no other malady shows so sudden and marked destruction of red cells and waste of hemoglobin. But the liver takes care of the liberated hemoglobin and it does not appear in the skin or the urine. We note only the pallor and the lack of zest. Another time the destruction may be more, or the liver less, active: there is decided haemoglobinaemia, the liver barely converts the haemoglobin into bile pigment, the skin is jaundiced in consequence, but no haemoglobin appears in the urine. Again, the excess of haemoglobin is more than the liver can play clearing-house for, and the burden of the removal of such toxic debris falls heavily, if not diastrously, on the kidneys. Behold now the frightful haemoglobinuria, the dirty, yellow skin, the pitiable plight of this miserable victim who had been careless of the day of small beginnings.

So much for the nature of Hemorrhagic Fever. What now of the treatment? Its prophylaxis may be perfect; but that neglected, we must treat it, when it comes. All malarial expressions being essentially the same, the remedies are the same for all malarial expressions. It matters not whether you have afebrile periodic depression and aching, afebrile periodic neuralgia as the sun-pains of the old folks, or painful and febrile attacks, intermittent or remittent, with normal urine or haemoglobinuria, the remedies for malaria are the same, the details and adjuvants in treatment varying with the gravity of the condition present.

What then are the remedies for malaria? First, the cinchona alkaloids, and their salts, or, as we commonly say, quinine. Second, methylene blue. Third, cacodylate of soda. With or preceding the first of these, comes calomel, of course, for its hepatic effect. For on account of the haemoglobinaemia always present, in whatever degree, and other toxic substances, the liver must always be our best friend at court, and is always deserving our most careful attention. As alterative and reconstructive tonics, iron, iodine, Fowler's solution and the bichloride of mercury may be of service in debilitated conditions following.

Time will not permit me to go into the details of treatment that individual circumstances and developments in a case might reasonably suggest and require. Upon these things we are agreed. The moot question is as to the giving of quinine in Hemorrhagic Fever. In general, therefore, let me say that if I were called to treat a case, I should allay my patient's fear, relieve his pain, and measurably control his miserable recurrent vomiting with necessary hypodermics of morphine

with atropine. I should give him from ten to twenty grains of calomel with an excess of soda. I should follow this in a few hours with a copious saline. I should repeat the calomel and saline whenever repetition seemed advisable. For the purpose of stimulating elimination by the kidneys also, my administration of water would be limited only by gastric tolerance. I might encourage renal output, if failing, by hypodermics of pituitrin. I have seen this relieve anuria of twenty-eight hours duration. And of anti-malarial remedies by the stomach, I would give or try to give, two grains of methylene blue every six hours. This I would give in the form of the methylene blue compound or ordinary gonorrhea tablet. It is more effective in this form and better tolerated by the bladder. If it was ungrateful to this organ, I should reduce my dosage. With the needle, I should give five grains of cacodylate of soda daily for three days, and then on alternate days for a time. Would I give quinine? If my patient had fever I would give him quinine p. d. q.—which by interpretation is to say, as soon as I could, indifferent whether his urine were as clear as the icicles melted that hang from Dian's temple or murky as a spoilt specimen of Welch's kickless Grape Juice. Time was when I would not have said this or behaved this way. Not many years ago, I would have withheld quinine until my patient, dead or alive, was in less urgent need of it. Meantime I would have implored for him the benign intervention of divine grace, while I, myself, in ignorance what to do, sweltered between hell and the iron-works.

I am aware that many capable men would now take issue with me and follow a contrary course They even tell me that attacks of haemoglobinuria not infrequently are precipitated by the administration of quinine to one suffering with chronic malaria; that the remedy, in other words, may cause the disease against which it is given and for which it is universally recognized as most nearly a specific. So easy it is to convert a *post hoc* into a *propter hoc*. If the quinine had been given earlier, the imminent cell-destruction by parasites resulting in haemoglobinuria might have been prevented; given too late to arrest damage already done, why should the haemoglobinuria not appear, why should quinine given so late be charged as the cause of it, and why should quinine not be given none the less to prevent further damage that otherwise will be done? These haemoglobinurias from destruction already done are scheduled to come and will come, quinine given or not; it is manifestly unfair to charge quinine with causing an injury which it had been denied reasonable opportunity to prevent. Whenever, therefore, there is febrile manifestation of malaria, quinine should be given abundantly without hesitation or delay. I have seen it withheld for fear it would precipitate hemorrhage, and directly the hemorrhage came without it. I have withheld it and seen the hemorrhage continue fifty-odd hours. I have administered quinine copiously and seen the hemorrhage cease in twenty-four hours.

Following this course, I am giving my patients a reasonable service. The mortality with quinine is very much less than without it.

Quinine holds its place as our nearest specific remedy in all forms of malaria; but when insufficient dosage has been given and the parasite in some chronic conditions is said to be quinine-fast, then methylene blue is an efficient adjuvant, if not a better remedy.

But how shall quinine be given when the nausea and vomiting characteristc of the disorder make oral administration so uncertain? If it is given by the mouth, the patient, given water and soda, will give you a clean stomach, whose recalcitrance you will control by hypodermics of morphine. For a time I deceived myself with so-called hypodermic quinine,—intra-muscular injections of 7½ grains of quinine dihydrochloride in 1½ mils of solution. We must remember that, in many cases of Hemorrhagic Fever, the parasites all seem to be destroyed with the explosion, the patient sweats, the fever falls, and is gone in a day. In one such case I gave thirty grains intra-muscularly in four hours while the fever was high and the urine like abundant smoky poke-berry juice. Next morning the fever was gone and the urine was clear. On the evident efficacy of this method, I congratulated myself. I had that good inward feeling noted of our little mother-goosey friend, Tommy Horner. Later I found that I had only embossed my patient's gluteal region and added to his assets by bestowing some perfectly good quinine where moths could not corrupt, nor thieves break through nor steal, nor could it leave the seared confines of its resting place to en-

ter the waiting, waltzing circulation. Done aseptically, however, with a long needle straight down, there is no danger of abscess or other untoward event. It remains quietly with small inconvenience where you put it, suggesting the profound serenity of a succulent cherry hid deep in a fancy chocolate drop. If worthless to the patient, this method of administration is helpful to the family; they feel that you are doing all that can be done, that you are up-to-date and abreast of the times, notwithstanding the site of medication. To comfort the family sometime when everything seems to be going dead-wrong, I may give hypodermic quinine again. If then suffering the ennui of defeat, I shall inwardly ask myself what's the use, I shall sorrowfully look my anaemic friend in the face and recall the fate of the Yankee bummer who, just after the War between the States, was killed and buried seclusively in the terebinthinate wilds of Georgia. Some years afterwards, a hunter came one day upon a mound, evidently of human sepulture, hid deep under sighing pines. A lightwood board stood at the western end of the grave. Rude lettering was carved upon the board. After some tedious effort, the lone hunter triumphantly read,

"The Yankees came, a murderous band,
To take from us our Southern land;
Behold this lone sepulchral spot—
'Tis all that this damned Yankee got!"

Abundance of land, but of what use to the Yankee? Occupying only six feet by three, he could not grasp an inch of that. Your canal zone full of quinine and none in your blood, how are you benefited by this method of administration of quinine?

Another method of administration I have tried, of which I sadly confess I am no more enamored, to-wit: the intravenous injection of five c.c. of solution, containing seven and one-half grains of the dihydrochloride. By whatever route given, quinine is a remarkably irritant drug. But if quinine by the needle, in either the muscle or the vein, were systemically available, then the needle for evident reasons were the method of choice. But solutions of this strength thrown under the skin will invariably cause a slough; thrown into the muscle, they wall themselves in; thrown into a vein, they cause a thrombus at least. You could not inject the same vein again tomorrow: it is obliterated by its use to-day. You might make use of it again in a week, the thrombus perhaps liquefying in that time, your patient living or dead. But there could be no systemic effect of the quinine until it went freely into the blood current. This it could not do so long as it was enthralled in the thrombus. To be of service, the intravenous route must have for its use a solution much weaker and therefore more acceptable to our liquid flesh than I have had opportunity to use.

Out of my own experience, therefore, I am persuaded (but every man sees his gods with his own eyes) that the best of all routes for the administration of quinine is by the mouth. I give five grains every two hours, or ten grains every four hours in one twelve hours out of each twenty-four—that is, forty grains a day,—until the fever is gone and the temperature is subnormal for a day or two For certainty of effect, I prefer to give it in solution. I give the sulphate with one-third minim of hydrochloric acid to the grain dissolved in dram doses of Elixir of Lactated Pepsin. I usually flavor the solution with Fluid Lavender Compound, and I would add to this a modicum of deodorized tincture of opium but for the peskiness of narcotic restrictions. Opium would add, not only to the tolerance of the mixture and the comfort of the patient, but also the efficacy of the quinine.

TRANSUTERINE PNEUMOPERITONEUM.*

By JOSEPH J. MUNDELL, M. D., Washington, D. C.

To Dr. I. C. Rubin, of the staff of Mr. Sinai Hospital, of New York, the profession is indebted for a contribution to medical progress of real value. Dr. Rubin, interested in sterility in the female, had been working for the past few years with the view of demonstrating the patency of the fallopian tubes, first by injecting opaque solution, such as collargol, thorium and bromide into the uterus and tubes and then taking roentgenograms. He states that definite occlusion of the tubes could usually be demonstrated by these methods, but that patency could not always be verified. Then, too, there were other features which precluded its popularity. When two or three years ago the introduction of oxygen into the peritoneal cavity for diagnostic purposes was brought out, it occurred to Rubin that here was the means for the development of his idea.

Immediately then he began his work, in-

*Read before the Georgetown Clinical Society, January 17, 1922.

sufflating oxygen into the peritoneal cavity through the uterus and tubes. As it later developed oxygen was found to be slightly irritating and slowly absorbed, carbon dioxide has lately been used in its stead, as it disappears entirely within thirty minutes and is not thought to be in the least irritating to the peritoneum. The apparatus is not complicated and the technique is simple after performing it a couple of times. The apparatus comprises a tank of CO_2 with a reducing guage, a specially made volumometer, a manometer, either a tycos or mercury, a metal cannula of the Keyes-Ultzman type, attached to which is a rubber urethral tip, and rubber tubing. The volumometer is a water bottle to which three bent glass tubes are attached, one of which dips down below the water level and to which is attached rubber tubing from the gas tank; rubber tubing is attached to the other glass tubes, one being attached to the manometer and the other to the cannula.

With the patient in the lithotomy position, any cervical mucus is removed by means of a suction syringe and the cervix and vagina painted with iodine. A single toothed tenaculum forcep is placed horizontally on the anterior surface of the anterior lip of the cervix and the cannula introduced. If done carefully and gently, these manipulations need cause very little or no pain. The cannula being attached to the rubber tubing going to the volumometer, the gas is now turned on in such a manner that the flow will be gentle, the rate having been calculated to be from 150 to 250 c.c. per minute. Rubin states that the average amount of gas required is from 75 to 250 c.c., depending upon the size and build of the individual. My experience is that even a great deal more than that makes no difference, though a large quantity is not needed.

The manometer readings are important. In patent tubes the pressure will at first register from 60 to a little over 100 mm., due to the resistance of the uterus, after which it will drop suddenly 20 to 50 points, as the gas passes through the tube. In occluded tubes the pressure reading will continually rise until 200 mm. is reached, when the gas is cut off, for above this is said to be danger. Immediately after the introduction of the gas, the patient should be fluoroscoped in an almost upright position, when, in the successful cases, gas will be very plainly seen on the right side between the liver and the diaphragm. If desired, roentgenograms may also be taken preferably on a Potter-Bucky frame. All this should be done, however, within fifteen minutes, for within thirty minutes all the gas may have disappeared.

After acquiring the technique, the procedure is attended with very little pain and discomfort for the patient. When the gas passes into the peritoneal cavity, there is a characteristic sharp pain, not severe, felt under the right shoulder blade and, if much gas is introduced, some pain and fullness are complained of over the whole upper abdomen. All discomfort disappears, however, in twenty or thirty minutes, and the patient is perfectly comfortable and in one hour's time is permitted to resume her usual activities. Introduction of gas into occluded tubes may cause considerable discomfort. One might conjure up in the mind grave dangers attendant upon such a procedure, but in practice such is not found to be the case, for in close on to one thousand cases reported by Rubin, Peterson, Ward and others, no serious morbidity has been noted. It is possible, if one is not careful in the selection of cases, damage might be done; for instance, a patient with a history of a recent pelvic infection may still have an acutely inflamed tube which may be slightly occluded with mucus or pus containing gonococci. Forcing such material into the peritoneum would naturally be accompanied by dire consequences. It goes without saying that discretion must be exercised in the selection of cases.

This procedure will be found applicable and valuable in no small number of cases, for many women present themselves during the course of a year to take up the problem of sterility. One would not for a moment take up the consideration of sterility in the female without first determining the status of the husband's genito-urinary system. Certainly it should be a source of great satisfaction to know that we have at hand a method so simple and devoid of danger whereby we may determine that there is no mechanical impediment to fertilization in the female. Having at hand such an aid, it should be made use of in a large number of women presenting themselves on account of sterility. It might be said that one unsuccessful attempt to introduce the gas into the peritoneum should be checked up by at least a second attempt before rendering an opinion that the tubes are non-patent. Many of you have no doubt performed a dilatation

and curettage for the relief of sterility and numerous operations on the cervix have been devised for the same purpose, but the futility of such methods can be readily seen if the tubes are occluded. Heretofore, the only way of determining occlusion, when it was suspected, was by an exploratory laparotomy, and it is needless to point out the advantages this method holds over a major operation. It is not at all uncommon, as anyone doing any amount of gynecological work will testify, while operating for some other condition, to find occluded fallopian tubes, when they were not suspected. A case reported by Rubin in one of his publications aptly presents the value of the method.

"A woman married three years and sterile. Upon pelvic examination she was advised to be operated and a dilatation of the cervix, curettage and stem pessary insertion were subsequently performed. Four days following this operation I was requested to test the patency of her fallopian tubes. The method employed by me resulted in failure to establish pneumoperitoneum. Laparotomy the same day revealed the fact that both tubes were closed at the fimbriated end. They were only slightly distended, their walls were flaccid and they were surrounded by soft cobweb adhesions—in other words, an old standing hydrosalpinix. The operation on the cervix in this case was certainly fruitless and could have been avoided by a preliminary examination with oxygen."

After having tried out this procedure on several cases, I am convinced that Rubin has developed a diagnostic aid that is of inestimable value and one that would seem to be comparatively devoid of danger when used with discretion.

1616 *Rhode Island Avenue, Northwest.*

DIGITALIS IN THE TREATMENT OF CARDIAC DECOMPENSATION.*

By L. E. STUBBS, M. D., Elizabeth Buxton Hospital, Newport News, Va.

Thinking over a subject to present to you it seemed advisable to consider one of practical importance, and one about which there is more or less general agreement, rather than to discuss something of theoretic interest only. As for its practicability, I know of no more practical subject than the one chosen.

All are agreed that digitalis is very important in the treatment of cardiac decompensation. Yet one finds varying opinions as to dosage, indications for its use, and the efficacy of the drug. It is with the idea of clearing up, if possible, some of these differences of opinion that this paper is written.

It is of interest to consider some of the earlier observations on the action of the drug. Withering, who first introduced digitalis into therapeutics as a remedy for dropsy, observed that "it has a power over the motion of the heart to a degree yet unobserved in any other medicine and that this power may be converted to salutary ends." But he did not connect this cardiac action with the relief of dropsy. Ferriar was the first to show this relation and pointed out that "the power of reducing the pulse is the true characteristic" while "its diuretic power is a less constant and less essential quality of the plant." Beddoes and Kinglake pointed out that, while the pulse is slowed, it is also strengthened, Beddoes maintaining that "in a certain dose digitalis will increase the activity of the arterial system." Its action on the heart aside from its inhibitory slowing, was first demonstrated by Schmiedeberg on the frog's heart.

Since the time of Withering and Schmiedeberg, many erroneous beliefs have prevailed with reference to its action. Fortunately, clinical studies with modern graphic methods have proven conclusively the incorrectness of many of these beliefs and have given us more precise knowledge of this most important drug. From the work of such men as Eggleston and Hatcher, of New York, Christian, Pratt and White, of Boston, and Cushny, of England, we have more or less accurate knowledge of its action on the diseased hearts of human beings as well as upon the hearts of animals.

In the use of any drug it is necessary that we first know its action so that we may correctly estimate the results obtained. It would seem appropriate at this point to refresh your memories as to the modern conception of its action. Since most of the therapeutic effects are attributable to its capacity to slow the heart rate, especially in auricular fibrillation, we may first consider this action. Whether or not the rate will be slowed depends upon pre-existing conditions largely, and especially upon the rhythm of the heart. If the normal rhythm be present, any great degree of slowing is unusual except in cases with edema or in those with a rapidly acting, hypodynamic heart in which the rate of the whole

*Read before Seaboard Medical Society in Norfolk, December 7, 1921.

heart may be slowed by vagal action, inhibiting the rate of impulse formation in the sinus. Likewise, the rapidly acting hearts of acute infections will be little, if at all, slowed, though there are other indications of its beneficial action on the failing hearts of these aside from the slowing.

Therapeutic doses stimulate the vagus center and commonly induce some delay in conduction time through the auriculo-ventricular bundle. This may, and often does, amount to partial heart block and very occasionally complete heart block, which phenomenon may be abolished with sufficient doses of atropine, this paralyzing the vagal terminations in the heart. There are, however, exceptions to this which will be mentioned later. The slowing in auricular fibrillation is due to a depression of conductivity which prevents a large number of impulses from reaching the ventricles but the auricular rate is not influenced. This action is due in part to unknown muscular action, distal to the vagal terminations, which is not influenced by atropine, and in part to central action in the vagal centers. This slowing permits an increased volume of blood to enter the ventricles during the prolonged diastole, improves coronary circulation, and affords the heart muscle better nutrition.

Pharmacologic experiments and clinical observations have shown that digitalis may increase both the force and magnitude of ventricular contractions through direct action on the heart muscle. Acting in the above mentioned way, the failing heart is more or less completely restored with relief from the various concomitant symptoms.

In addition to its action on the vagal centers and cardiac muscle, digitalis may also act on the arterial walls and upon the centers constricting the vessel walls, thus elevating blood pressure. But it is important to remember that there is no clinical evidence that either of these actions takes place as result of any dose which can be given with any degree of safety. Clinically, we may expect the following: when there is heart failure and abnormally low blood pressure, the latter tends to rise as compensation is restored; where there is cardiac failure and high blood pressure, the latter usually drops with restoration of compensation.

Having considered the action of digitalis on the cardio-vascular system, the next subject to be considered is the indications for its use and the contraindications. The indications may well be summed up as follows: cardiac decompensation from whatever source indicates the use of digitalis. There are, however, certain reservations which may well be made and certain cautions may be urged. Unhappily, not all forms of cardiac decompensation are relieved by digitalis but this is due more to the advanced degree of disease of the myocardium than to any inherent shortcomings in the drug. Cardiac decompensation in the young and that resulting from rheumatic disease of the heart are more amenable to treatment than that resulting from arteriosclerosis in later life and from syphilis. In auricular fibrillation especially is it efficacious. Auricular flutter is likewise very strikingly benefited. Pulsus alternans may or may not be amenable to its action, also the rapid regular decompensated heart may be resistant. But in both of these conditions the myocardial damage is so extreme that there is but little likelihood of improvement from any form of therapy. Here also the margin of safety is so narrow as to necessitate great care in the use of digitalis, for serious toxic effects may be very readily induced. We can but try, however, with the above precautions in mind. In decompensated hearts with numerous extrasystoles, great care must be used also in the administration of digitalis, since the number of extrasystoles may be increased. Lastly, paroxysmal tachycardia is but rarely benefited by its use.

Angina pectoris, hypertension, and aortic insufficiency with decompensating hearts, have long been held to contraindicate the use of digitalis. Modern work has shown that these will no longer stand as such. Angina pectoris rather than being a contraindication where decompensation exists is really an indication, for often when compensation has been restored, the attacks may occur much less frequently and may be much less severe while compensation is maintained. So with hypertension, as this is often a compensatory mechanism by which the failing heart maintains the circulation. Rather than seek to lower blood pressure by various vaso-dilators, we should exert our energies more to relieving the embarrassed heart by restoring compensation and, when this has been accomplished the high blood pressure will most often be seen to lower, the need for same no longer existing. Aortic insufficiency has been supposed to be a contraindication be-

cause the action of the heart is slowed and the regurgitation of the blood has been supposed to be increased, as well as because of the fact that the blood pressure has been supposed to be increased. But neither of these actions happens in man with therapeutic doses, that is in the case of pure aortic insufficiency. So we see that there are really no contraindications, though with certain types of cases caution and close observation are necessary.

Signs of digitalis intoxication should be looked for and, when they occur, the drug should be stopped for the time being. Such signs as nausea, vomiting, marked grade of sinus arhythmia, especially when independent of respiration, partial or complete heart block, premature contractions, coupled rhythm due to the occurrence of premature contractions after each regular beat, should be noted and combinations of any two or more of the above call for care, and probably discontinuance of the drug.

Having decided to give digitalis, but two additional factors need to be considered; what form of the drug will we use, in what dosage and by what route. As for the first, it really matters but little what form is chosen so long as you know that the drug you are using is potent. Various digitalis preparations are interchangeable in ratio of their potency. Digitalis from various sources varies widely in its potency. If possible, have a reliable druggist keep in stock for you a good digitalis leaf in powdered form, the efficiency of which you have tested from clinical experience. Insist that your patients have their prescriptions filled by this druggist who will dispense the drug either in pill form made from powdered leaf, freshly made infusions, or tincture; the only draw back to the latter is the time consumed in its preparation.

How you will administer the drug depends largely upon the urgency of the symptoms with which you have to cope. Any form given by mouth will require about twenty-four hours for action, except as below mentioned. When conditions are urgent, it is well to have a suitable preparation for intravenous use, by which means an effect will be produced in a few hours, often within one hour. Subcutaneous use is less satisfactory, since the effect is less certain, and less rapid. Furthermore, any of the forms which are potent are apt also to be very irritating when given in this way. Where quick action is demanded or the patient is vomiting, intravenous use is probably the best, and for this purpose strophanthin is to be preferred with, of course, due precautions in a patient who has recently been taking digitalis. Liquid digipuratum for subcutaneous use is very satisfactory. It is better always to limit yourself to a few potent forms and to become proficient in their use than to use many forms, simplicity and potency being the all important factors.

Lastly, what dose will we use? The best therapeutic effects are obtained, only when enough of the drug has been given to produce one or more of the symptoms of minor intoxication. In the absence of satisfactory therapeutic response, no one can say that digitalis has been given a fair trial until such symptoms have been produced. There are three general plans for oral administration: small dose method in which four to six days are required for full digitalization; two to four grains of the powdered leaf or twenty to forty minims of the tincture are given four times daily, until results are obtained; the large dose method which requires usually one to two days for results to be secured. During the first twenty-four hours, six to seven grains of the powdered leaf, or one drachm of the tincture, are given every six hours for the first four doses; the second day, three grains of the powdered leaf, or thirty minims of tincture, are given and continued four times daily until full digitalization is obtained. The third method, the body weight method, is not at all practical except in hospital practice. It is not devoid of danger, and close, accurate observation is needed, such as can be made only in the hospital. For purposes of this paper, this method may well be omitted, but for sake of completeness it is given for what it is worth. Under ideal conditions in a hospital, it is very useful and I have seen it used and used it myself with excellent results and thus far without evil consequences. It has one great advantage in that full digitalization may be secured in twenty-four hours and incomplete digitalization of a valuable degree within six hours. From this it can be readily seen that in urgent cases it is very useful. The method depends upon the establishment of an average total amount of digitalis necessary to produce full digitalization. The total amount is expressed in terms of activity of the drug and the patients's body weight in pounds. The activity

of the drug is determined by the cat method of Hatcher, the unit being the weight of the dry drug in milligrams which is necessary to kill one kilogram of cat when injected slowly and continuously intravenously. This amount is the cat unit. The average total amount required for oral administration to man is 0.15 of one cat unit per pound of body weight. Knowing the activity of the drug and the patient's weight, the total amount of the drug necessary may be calculated very easily.

To allow for variation in the absorbability of the drug and for variation in the patient's ability to absorb same, give one-half of the total amount at the first dose; one-fourth six hours later; thereafter one-tenth at six hour intervals, until full digitalization results. Where there is edema, it is best to deduct twenty-five per cent. from the total amount estimated as being necessary according to the patient's weight and use seventy-five per cent. of the total.

At times it may be necessary to administer the drug over long intervals of time to maintain compensation. Here always give by mouth and the patient soon learns by experience the amount necessary for him to use. Usually, one and a half to three grains of the powdered leaf, or fifteen to thirty minims of the tincture, will be sufficient for the twenty-four hours. Since the action of the drug is continuous, this amount is best given in one dose rather than in broken doses.

Finally, I might add that our failures with the use of digitalis are often attributable to our method of giving or to our ignoring the very important part of its use, that is its potency. We cannot expect results from any inert drug. Given an active drug, and given in proper doses, I don't know of any drug upon which we can depend with more certainty than digitalis.

THE TREND OF THE HEALING ART.*

By ALFRED B. GREINER, M. D., Rural Retreat, Va.

The early history of the art of healing is altogether legendary, but there is very good reason to believe that the country of Egypt is the place where the art was first cultivated with any degree of success, and likely the office of the priest was combined with that of the physician.

We find in the writings of Moses allusions to the practice of the healing art among the Jews, especially in its application to the treatment of leprosy. These priest physicians were the first to conceive the idea that cleanliness and the control of contagion by proper isolation were necessary in the practice of preventive medicine. This particular branch of the healing art, and by long odds the most important of all its subdivisions, is nothing new, as we have been inclined to believe, is not modern, but is simply staging a return after having suffered some neglect for a few centuries.

The name of Aesculapius appears prominently connected with old-time medicine, and according to one story, he became so proficient in its practice that he acquired the power of restoring the dead to life. It is interesting to note that because of this power Pluto became offended, fearing that his kingdom would not be sufficiently populated, and complained to Jove of the innovation, and thereupon Jove slew Aesculapius with a flash of lightning. If restoring the dead to life can properly be construed as the practice of the healing art, this was the first act, so far as we know, of any attempt being made to restrict the practice.

It is extremely unfortunate that the term medicine is not always used in its most comprehensive sense, embracing as it does every device known to the healing art. We find, however, that there are modern jurists, and legislators especially, who do not accept this definition of the practice of medicine, and who spurn all efforts to establish such a fact. Fact it is, nevertheless, that under the one term medicine is included all devices which have any property within them of mitigating or curing disease, and it is equally clear that all who make use of these devices are practicing medicine.

There was a period in modern times given over to expansion and improvement, a developmental period out of which grew the necessity of specialization which has been so great a boon to humanity. Society entered into the situation, and the public demand for the service of specialists stimulated those seeking a golden opportunity for attaining prominence and distinction in the application of some well defined branch of the healng art. Here is where the trouble began, because the successes attending the efforts of the specialists tended to arouse the ire and envy of cults

*Address of president before the Southwestern Virginia Medical Society, in Pulaski, May 11 and 12, 1922.

which have ever since sought by legislative enactment to abridge the term medicine, and confine the efforts of all physicians to the narrow channel of treating all diseased conditions solely by the use of drugs; and in their effort to further subdivide the branches of the healing art they have endeavored to create a loophole through which they may crawl in their efforts to secure permission to practice their trade, the excuse being that they do not make use of drugs.

It is useless to select one of the procedures of the healing art and attempt to attach to it such importance that it immediately becomes a science within itself.

As a profession practicing the healing art we have been too content to delve into scientific problems, vying with one another in being able to proclaim priority in the discovery of some new application of the art, and have too long allowed our relations to the public and the state to drift wherever ill advised public opinion created a current. The situation as I view it is not critical, but it may become so.

State medicine, whatever may be its scope, looms on the horizon of the healing art, and, while no brief should be held against any agency designed for the improvement of health conditions, yet it is to be deplored that there is not more co-operation with the practicing physician and more co-ordination of effort. Some sort of union of effort would relieve the chaos, but this is largely a legislative matter and the solution is not in sight. Various health agencies have created many salaried positions: the school nurse, the itinerant specialist to examine school children and conduct surgical clinics, and the clinician to diagnose the diseased condition of any who may apply.

Legislatures at every session have to contend with numerous bills for the creation of new health activities and increased appropriations and there have been strenuous efforts to regulate and restrict the legitimate practice of medicine. Many of these efforts have been the aims of the osteopaths and the chiropractors.

Recently I noticed the statement that seven years ago there were introduced into the forty-two state legislatures then in session over one thousand bills on public health alone, an average of over twenty-three bills. Some of these bills were endorsed by medical societies, and others were the creation of legislative acumen and charlatan insistence. There seems to be an unorganized effort to legislate health into the individual, and in many instances the indivdual shows an inclination to resist legislation and interference with what he terms his personal liberty. There are various distorted views of what constitutes personal liberty, but, when there appears the effort to legislate medicine and morals into the American public, the various opinions show an united front of resistance. There seems to be no fixed policy in the legislative effort: there are objectives but there is no accord among the seekers of them, and the agencies interested in health matters are consequently conducting a sort of futile health campaign. In brief, there is too much divided effort.

Some states are adopting health measures that have been discarded by others. Some states are recognizing the drugless healers and placing them on a level with the physician, while other states require of them a professional education. There seems to be no common ground on which all interested can stand.

Education and not legislation of the public has been the hue and cry for some years; there has not been an overdose of education but there is a woeful lack of interest in health matters, and the confusion existing among those who practice the healing art is largely the inspiration for this lack of interest.

Recent statistics compiled by the Council on Medical Education and tabulated in the *A. M. A. Journal* of April 29, 1922, show that the house of those practicing the art of healing is not yet clean and the floor is yet littered with the illiterate.

Much house cleaning needs to be done before the legislative atmosphere can clear and not until a union of all health forces can be effected will there be attained idealism in the healing art. But there can be no union until there is co-operation, and at present we are far from idealism.

THE MANAGEMENT OF NORMAL LABOR AND THE PUERPERIUM.

By A. M. SHOWALTER, M. D., Cambria, Va.

Preliminary Remarks.

From the earliest beginning of mankind, when following the creation of man, in the Garden of Eden woman was brought into

*Read before the Southwestern Virginia Medical Society at Pulaski, May 11 and 12, 1922.

being by a surgical process, down to the present time, the subject of obstetrics, or the proper handling of the mother and infant during childbirth has always attracted a great deal of attention and has been a subject around which many luminaries of the medical profession have at times written volumes upon volumes of valuable literature, and still the fact remains there are differences of opinion among us yet just what is best to do under specified circumstances. For the most part, we are agreed upon the more important or fundamental questions relating to the saving of the child's life and the mother's protection, yet the important fact remains that there are deaths among infants and among maternity cases too often still, to warrant our arriving at the conclusion that all has been said and done that can be, in order to obtain the best results.

I do not know of any phase of the practice of medicine in which there is as much diversity of opinion, when it comes to the individual handling or treatment of a patient, as there is in respect to a normal labor case. This is perhaps due to the fact that we seldom find it necessary to call upon other physicians to assist us in our work unless it be in complicated cases, and this at once takes us away from the particular phase of the subject, which I have selected for discussion—The Management of Normal Labor and the Puerperium. We therefore work out our own salvation, so to speak, in our individual technique, using certain general principles upon which to formulate our management of labor cases and, so long as things go well, we are not inclined to make any change. If they fail to go well, then we may change our technique, but unfortunately the patient generally becomes an unfortunate victim of our mistakes and we, learning by experience, are left a legacy of information for the treatment of future cases.

In this connection I wish to state that I shall refer to normal labor such cases as do not require any radical or surgical means of delivery, such as version, forceps, Caesarean section, etc., but the cases that are delivered within a reasonable length of time, without any artificial assistance except at certain stages of the second stage of labor. I will for convenience divide this subject into four parts under the following headings: diagnosis; treatment during labor; treatment of infant (briefly); outline treatment of mother during puerperium.

(1.) Diagnosis.—The question of determining what you have when you are called to see a labor case is necessarily of paramount importance, and is in this instance of no less importance than it is in surgery or medical diseases. To distinguish between a normal and an abnormal labor case is absolutely necessary in order to know how to treat a normal labor case as well as an abnormal one. This is by no means an easy matter and, like diagnosis in other conditions, is perhaps the most difficult thing in the practice of obstetrics; yet, upon a successful determination of the conditions present, rests very often the responsibility of one or more lives. In other words, when you know it is safe to sit down and wait, do so, but not unless you do know it. for proper intervention in abnormal cases is just as important as no intervention in normal cases. A careful examination of the abdomen will generally easily reveal the position of the child except in such cases as occipito-posterior positions, R. O. A. which makes little difference, and in case of twin pregnancy (which is not always an easy thing to determine), and placenta previa. Having made the necessary examinations externally and internally to determine the fact that we have a normal condition to deal with, we then pass to the next step in our treatment, namely treatment during labor.

(2.) Treatment During Labor.—It is during this stage of the case that we find most of our differences of technique as to how to treat the case and just what to do, as far as my observations are concerned. One physician will not give chloroform at all, and another gives it to all cases indiscriminately. One will use deep anaesthesia and another very light, while still another will follow the "Twilight Sleep" idea and wait for results. One will use stimulants, such as ergot and pituitrin, and another will say "let nature take its course," and so we find "just so many men, just so many minds," as far as the treatment of the case is concerned. In giving you my views on this subject, I do not expect that it will meet with your entire approval, for it would be rather an unusual thing for a physician to read any paper that every one would agree on, and, if he did, it would, needless to say, be rather uninteresting.

The first and most important thing to do in

all cases of labor, as far as treatment is concerned, applies to the self-applied treatment on the part of the physician, namely, a thorough scrubbing of the hands and washing in alcohol or bichloride of mercury, or some good antiseptic, and the use of rubber gloves, if you may prefer them. I seldom use rubber gloves unless it be for my own protection, or in the event I have some very virulent infection with which I have likely contaminated my hands. The next thing is the careful bathing of the external genitals of the patient by the nurse, and it is very important to have a nurse that knows what this means, as I find a good many of the so-called nurses with whom we have to deal in labor cases in the country have little idea of what a careful bathing with an antiseptic solution means. While shaving a patient is probably technically the best thing to do, like wearing rubber gloves, I do not think it is always practical and hence cannot yet be considered as proper regular routine, until the ideas of our patients have changed a great deal from what they are now. In this connection I wish also to say that I do not believe in the use of vaginal preparations such as douches, unless you are dealing with an acute vaginitis from some infection. In this event, I am rather inclined to prefer a douche of 1:2000 bichloride of mercury, or lysol, one dram to the quart. I do think an S. S. enema should always be given to cleanse the lower bowels in order to prevent fecal contamination at time of delivery.

After having made a careful examination and having determined the position of the child, the next thing to determine is the nature and character of the pains, how far apart, how long they last, and how forceful while they last. The nature and consistency of the cervix, whether soft and pliable, or thick and rigid, and the amount of bulging of water produced by the contraction of the uterus during pain. When these facts are all determined, you are in a position to know best what to do,—whether to wait and do nothing, or whether to use some remedies to assist in the delivery of the child. In the first place, a careful examination of the mother's heart should be made that we may know whether it would be safe to use chloroform. If there is no contra-indication to the use of chloroform, I believe in most instances that its proper use is a distinct advantage to the parent and child, also. Furthermore, I believe that in a vast majority of cases the timely use of uterine stimulants, such as pituitrin and ergot, controlled in their action by chloroform, is a distinct advantage to both mother and child, and it is right here, in my opinion, where the great criticism has come, especially of pituitrin. It has not only been used when it was not at all needed, but it has been used in too large doses, and, above all, the physician has lost sight of the fact that no drug of this kind should be used without a control to prevent the too speedy delivery and lacerations that often follow, or the rupture of the uterus, as has been frequently the case. There will be no ruptured uteri or lacerated perineums, in my opinion. I don't care how hard your contractions are, whether natural or induced, any more than the incompatibility of the size of the child and adjacent perineum will permit of, if sufficient general anesthetic will be administered to control those contractions, so that they will not be too forceful. Of late I notice a great deal of criticism about the use of pituitrin. I wish to state that in my opinion, it is one of the most valuable drugs that has been brought to our attention in recent years but, like all means of so much potency, it should equally as well be carefully safe-guarded. I believe that by its use a majority of the labor cases can be painlessly delivered,—that is, by using chloroform to induce rest and the other to induce contractions. In other words, a patient having normal pains, put under chloroform, will generally slack up the contractions of the uterus until labor, so to speak, rests entirely, or is so slow that the mother is completely worn out and the child is often born dead from the prolonged pressure on the head. But suppose you use one-half c.c. pituitrin and then put your patient into a state of unconsciousness, labor progresses as rapidly if not more so than it did before and the child is born while the mother is entirely unconscious of anything that is going on. In other words, the chloroform puts the sensory nervous system to sleep as well as the voluntary muscles of the body, before it puts to sleep the involuntary muscles, and so you get an unconscious active contraction. Furthermore, I believe the use of forceps can often be obviated by the use of stimulants, and with less damage.

I believe that the great majority of labor cases do need some stimulation to get the best

results, for what reason I am unable to say. A small percentage of apparently normal cases are too slow to expect good results either to mother or child. Then, when the head presents at the perineum, if the muscles are tight and likely to tear, you push your patient to the point of deeper sleep and hold as long as you wish before delivering the head of the child. In other words, to make my point clear, I believe that when labor is once started, the shorter the period of delivery, the better off both mother and child are, provided you do not push this to the point of rupture of the uterus and unnecessary tears of the vagina and perinuem. By the combination of the use of stimulants and depressants, you can get an unconscious delivery, as a rule, that has a more beneficent effect than the "do nothing" policy, particularly as to prevention of nerve shock to mother, and damage to the child's head.

Earlier in the practice of medicine I followed a very conservative policy and chose to let nature take its course in all normal or questionable cases, but my own experience has taught me that was a great mistake. I find that a quick delivery, properly handled, leaves a mother and infant both in better condition than a slow method. With reference to the use of pituitrin, I believe the great mistake has been made in giving the improper dosage, for I notice further that some patients are very sensitive to the drug and others are very tolerant of it. I do believe that in this instance, as all others, it is best to be on the safe side and give small doses to start with, unless you are sure what dose will be indicated, and I do not know of any means whereby this can be found out. My rule is to give one-half c.c. pituitrin in all cases that seem to need a stimulant, but even this is entirely too large a dose for some patients. I never give it, however, unless I have chloroform and a suitable case to give it in to stop the contractions, provided they get too strong. In the event this does not get results, which is often the case, I use larger doses and, in those cases where the reaction is very sluggish, and the contractions are steady but very light, I have used as much as two c.c. at a single injection with very gratifying results. Start your dosage low and increase it if necessary to the point that you can get good, strong, and semi-conscious contractions of the uterus, under chloroform, and I believe you have obtained your best results.

In the event pituitrin does not work, and in some cases it does not stimulate, I find that ergotole will frequently do the work when pituitrin will not, two c.c. hypodermically, or four c.c. by mouth. Very often too the cervix tends to follow the head of the child and delivery can be materially assisted by holding back the anterior or posterior lip of the cervix as the head descends during a contraction, and this is so frequently the case that I feel as though it should be mentioned among details of the handling of normal labor. Particularly when the head impinges on the perineal muscles and the pains reach a sudden degree of virulence, I believe the anaesthetic should be pushed rapidly and the head held back by hand, if necessary, until delivery can be effected easily and between contractions, if possible. I believe also that an artificial rupture of the waters should be made in most instances as it frequently tends to retard labor, after its purpose of dilating the cervix has been accomplished.

As soon as delivery is completed, the cord is tied in two places about one inch apart and about three inches from umbilicus and cut between the ligatures. The fundus of the uterus should be gently massaged or rather carefully watched to see that it contracts well, a period of ten to fifteen minutes being the usual time necessary for an easy expression of the placenta. A careful watch should be made of the uterine contractions to detect any possibility of undue hemorrhage for at least one hour after delivery and, if there is no trouble in this time, as a rule I feel safe in leaving the case. If the placenta does not express itself automatically within a reasonable time, slight pressure on the fundus of the uterus together with gentle traction on the cord will generally easily deliver it.

A careful examination is then made of the perineum to see if there are any lacerations and if so they should be immediately replaced and sutured, getting the best approximation possible. I do not make it a rule to search for tears of the cervix, and am perfectly frank to say that I find it rather working in the dark to try and find or repair one at time of delivery, though others of you may think this is an easy matter. Any trouble with the cervix will show up sooner or later and I doubt if any real danger is done in waiting. At any rate I do not believe it is practical to

either diagnose, treat or prognose a cervical tear at time of delivery.

(3) Care of Infant.—The child is thoroughly rubbed with oil, cord dressed with sterile gauze and dusting powder, and laid away to be bathed and dressed eight hours later. At least this is my advice which is occasionally taken. For the most part, I find that the majority of people in this section seem to think this a very improper thing to do and, unless you have your patients in the hospital where you can look after this yourself, they generally bathe the infant as soon as you turn your back, which I really believe is a bad custom. The baby is then given warm water at intervals during the day and put to the breast at intervals of every two or three hours during the day and twice to three times during the night, starting from two to four hours after delivery. No further routine treatment is ordered for the baby, except the usual daily bath and dressing of the cord when it comes away, or beforehand when necessary.

(4) After Care of Mother.—After delivery, the external genitals are thoroughly bathed off with antiseptic solution and a sterile gauze pad applied. An external genital bath of one dram lysol to one quart of boiled water is then ordered to be used carefully twice a day, followed by sterile absorbent pads of cotton and gauze to be changed as needed. Patient is advised to stay in bed at least ten days, and longer if need be, and to consider herself an invalid, partiallly, for the next month after getting up. I always advise a person to get up in the upright position, when the kidneys and bowels act, just as soon as they feel able to do so after delivery, as I believe this encourages vaginal drainage and promotes good results. I also advise patient to be propped up in bed after the third day for meal time, as I do not believe this amount of exercise hurts anyone and at the same time does relieve the monotony of lying flat in bed all the ten-day period. Purgatives are advised to be used when necessary, castor oil being the one of choice. In reference to diet, I feed my patients very liberally, soft diet for the first three or four days and after that general diet, as I do not believe the food is as apt to hurt the patient as the baby, and, if no unfavorable report is heard from the baby, the patient continues on a full diet. If the baby is colicked and not digesting his food, then it may be necessary to restrict the mother's diet in order to prevent the digestive disturbances with the child. If the patient is in the hospital, I see her just as I would any other patient in the hospital; one or two visits if close by, during the first three or four days after delivery, and, if some distance out in the country, I leave it to the nurse in charge to call if anything goes wrong, which I find is seldom necessary. I used always to pay at least one visit to a patient after delivery, but so often finding these visits unnecessary, I have some time ago ceased to do this where the patient lives any distance out from office.

In conclusion, the few points I wish to emphasize may be summarized as follows: 1, thorough antisepsis by careful bathing of hands and genitals; 2, careful and thorough examination of patient to see that position of child is normal and size and shape of pelvis is normal; 3, see that labor progresses regularly and that child does not lay too long in pelvic outlet, using such means as may be necessary to bring about a reasonably speedy delivery; 4, carefully examine placenta to see that it is complete and intact, and repair all lacerations to external genitals; 5, do not leave patient until you are satisfied that uterus is contracting firmly and regularly enough to make it safe to do so, which is generally about an hour after delivery; 6, impress upon the patient as well as the nurse in charge the importance of regular and proper bathing after delivery, for a period of at least ten days, this being of all the postpartum treatment the most important; 7, give no medical treatment to mother or baby except such as may be indicated for laxatives or pain relieving agents. No regular routine medical treatment is necessary.

PERICARDITIS WITH EFFUSION.

By WM. B. PORTER, M. D., Roanoke, Va.

During the past five years I have studied pericarditis with effusion with the purpose in view of determining the relative importance of various previously described physical phenomena. This study has been done largely on hospital patients where intimate association with the x-ray department has made my conclusions relatively sound in that I was able to make an antemortem study of the underlying pathology. One must admit that a

*Read before the Richmond Academy of Medicine and Surgery, March 28, 1922.

Dr. Porter was connected with staff of Stuart Circle Hospital, Richmond, at time of reading of this paper, but has since moved to Roanoke.

study of this type has one outstanding fault, i. e. the influence of personal equation, yet I believe this is neutralized by the effort to establish certain clearcut cardinal facts instead of some single pet phenomenon.

It will not be my purpose to discuss the many various signs described as indicative of pericarditis with effusion. I am prompted to omit many because they have seemed to me to be of little or no real value. Such phenomena were described prior to the advent of accurate x-ray observations; hence, many cases of pericarditis with effusion presenting these phenomena were incorrectly diagnosed, or entirely overlooked. Also, signs which have received slight mention have proven themselves to be of cardinal importance.

No phenomena have enjoyed such an enviable heritage as the "obtuse cardio-hepatic angle" and the "disappearance of the friction" with the accumulation of an effusion. In the first instance an x-ray silhoutte of a pericardial effusion at once demonstrates the fact that the "cardio-hepatic angle" is not obtuse. On the other hand, it is in reality increasingly acute. But beyond this fact there is another of even greater clinical importance. Percussion of the right cardiac border offers many difficulties. In very large effusions the lung is displaced, consequently the right margin can be easily demarcated, but in relatively large effusions compensatory emphysema frequently obscures the percussion evidence of right-side extension. A study of a series of x-ray silhonettes of pericarditis with effusion furthermore demonstrates the fact that even in relatively large effusions the pericardial sac is not distended to any appreciable extent beyond the right sternal margin. In a study of the cases cited the right cardiac border has been of little value in determining the presence of effusions except in a few instances.

The presence or absence of pericardial friction has been even more uncertain. One case in this series well illustrates this point. While the patient was on the x-ray table an extensive friction sound was audible over the entire precordial area. A few minutes later, 1,350 c.c. of fluid were aspirated from the pericardial sac. A plate made shortly afterwards demonstrated that only a portion of the fluid had been removed. This is only one instance in many of a similar nature.

Much speculation might be introduced in an effort to explain this apparent inconsistency, yet it suffices to say that the most important factor in deciding the relation of the heart to the anterior pericardial sac wall is the relative size of the heart to that of the antero-posterior diameter of the chest cavity. It can readily be seen that if the heart fills the available space between the sternum and spine it will remain against the pericardial sac anteriorly. And again if the fiuid distends posteriorly, as it so frequently does, it tends to push the heart anteriorly against the chest wall.

I recommend that the presence of a pericardial friction rub should make one suspect fluid, its absence, on the other hand, has no cardinal value. Williamson, in 1920, reported his experimental studies on pericardial effusions, and in these studies contributed much to our knowledge of the primary distributions of effusions. He showed that the first distribution was along the lower margin of the heart, that is along that portion of the heart which lies in the angle formed by the diaphragm and anterior chest wall. As the amount increases, it extends around the right margin and over the apex, and a relatively small amount distends the pericardial sac around the great vessels at the base. As a clinical evidence of small effusions he attaches great importance to the downward displacement of the left lobe of the liver. This he believes is one of the earliest phenomena. It must be remembered that Williamson's work was done on cadavers, and, consequently, all diaphragmatic action and tone were absent. This might explain the frequency of such a finding in his studies, yet he emphasizes the same findings in clinical pericarditis with effusions. For me, the accurate location of the lower margin of the left liver lobe has been in the large majority of patients an impossible task. Abdominal distention and the taut abdominal muscles, especially the recti, have made the accurate determination so uncertain that in the larger percentage of cases this phenomenon has not been of any material assistance. One might discuss at length many other phenomena that have been described as indicative of pericarditis with effusion, yet I feel that it behooves us to consider seriously only those phenomena which through this observation and study have proved themselves cardinal. I come to what I believe to be the five most trustworthy physical findings elicited in proven cases of pericarditis with effusion:

1. A pericardial friction rub heard best while the patient is not breathing, and sometimes only audible at the end of forced expiration. I place this first, because it is usually the first sign to direct the attention to the pericardial sac. As I have previously stated it should at once cause suspicion of effusion and should never be used as evidence against an existing effusion.

2. Increase of the substernal dulness in the second and third interspaces, especially to the left. A study of a series of x-ray silhouettes at once gives us a palpable explanation of this phenomenon in the form of a widened mediastinal shadow. This phenomenon is best elicited in the recumbent posture with light percussion, using the "crooked" finger as the fleximeter. This I believe is one of the earliest signs of an effusion.

3. Extension of the left area of cardiac dulness beyond the apex beat, with a relatively high area of left auricular dulness. It is a well-established principle that for practical purposes the left cardiac border corresponds to the maximal apex thrust. In pericardial effusions, the percussion of the left border of *dulness* is very much more clearcut than percussion of the left *cardiac* border. One rarely encounters much difficulty in demonstrating the dulness beyond the apex or the high dulness in the left auricular area. The latter finding is confusing if there exists a mitral stenosis, yet in the absence of this lesion it is a most helpful phenomenon.

4. Evidence of compression of the left lung posteriorly. This finding assumes one of two rather distinct types. First, distant bronchial breathing with impaired resonance, elicited at the angle of the left scapula. With an increasing amount of fluid in the pericardial sac these findings increase, involving the entire left lower lobe posteriorly, closely simulating a pneumonic consolidation. Secondly, the physical phenomena of consolidation plus those of a pleural effusion. It must be admitted that many cases of pericardial effusions have an associated pleural effusion of a moderate size, yet I believe this is the exception and not the rule. The evidences of a pleural effusion are strikingly similar at times, so that I am convinced that not infrequently one taps a pericardial sac posteriorly, believing at the time he is aspirating the pleural cavity. There is one differential point of cardinal importance. Whereas in pleural effusions the dulness rises high in the midaxillary zone, in large pericardial effusions the line of dulness reaches its maximum height at the angle of the scapula, descends downward in the midaxillary zone and then rises upward about the anterior axillary line, to become continuous with the left margin of pericardial dulness.

5. X-ray. I will not discuss this method of study because Dr. Hodges will do so in detail. It suffices to say that the x-ray silhouette is the last Court of Appeal and its judgment is almost infallible.

SARCOMA OF THE LONG BONES*

By JAS. W. GIBBON, M.D., Charlotte, N. C.

Malignant tumors of bone constitute one of the most important fields of a surgeon's work. "Their very frequent occurrence, local destructive tendencies resulting in loss of limbs, rapid extension with loss of life, and the difficulties in establishing the prognosis render them a complex surgical problem." (Ewing). Within recent years our knowledge regarding these lesions has very greatly increased, but even yet accurate correlation of clinical features, x-ray appearances, pathology and prognosis are lacking and further investigation is needed.

Pathology: There is no uniform classification of the primary sarcomatous tumors of bone and bone marrow, but that of Ewing seems to be most generally accepted, and perhaps the most simple and reasonable. These tumors are divided into four great groups: 1. Osteogenic sarcoma; 2. Giant cell sarcoma; 3. Myeloma; and 4. Endothelioma (Ewing). Of these, the most important, by far the most frequent, and the ones principally to be considered herein are the osteogenic sarcoma and the giant cell, or epulis type of sarcoma. The myeloma and endothelioma are very rare tumors, and may be dispensed with briefly.

1. Osteogenic Sarcomata, the largest and most common of these groups, spring originally from the fibroblasts, or ordinary connective tissue cells, which are normally the progenitor of bone forming tissues of the body. Whatever the anatomical variety, wherever the location, periosteal or central, osteogenic sarcomata are produced from these cells always. It is worthy of note that these fibroblasts, whose chief function then is the production of bone,

*Read at the meeting of the Tri-State Medical Association of the Carolinas and Vriginia, in Norfolk, Va., February 22-23, 1922.

are capable of every wide degrees of differentiation, and often give rise to tumors which retain more or less the function of bone production. When this differentiation is not marked, or absent, and these cells seem to retain none of their normal function but are devoted solely to rapid and exaggerated reproduction, the tumor produced is a soft succulent mass of pleomorphic cells of irregular form, and of high malignancy. The more complete differentiation of the spindle cells into fibrous tissue, myxomatous tissue, cartilaginous and osteoid tissue, results in the more firm, more slowly growing, and less malignant tumors. It is, therefore, this fundamental characteristic of differentiation of the fibroblasts or spindle cells which has given rise to the more complex histological distinctions between sarcomas, and is exemplified in the terms, spindle cell sarcoma, large round cell, and small round cell sarcoma, fibrosarcoma, myxosarcoma, chondrosarcoma, osteosarcoma, and combinations of these as osteo-chondro-sarcoma, etc., when as a matter of fact all are simply degrees of one and the same process of growth.

The three anatomical varieties of osteogenic sarcoma are (a.) the fibrocellular sarcomas because of the predominance of fibrocellular tissue, and is chiefly periosteal: (b.) the telangiectatic sarcomas, because of the overgrowth in blood vessels, and is largely central, and (c.) the sclerosing sarcoma, because of the exaggeration of bone production, and is periosteal or central. These distinctions are not always clear, and there may be combinations of them in the same tumor.

(a.) *Fibro-cellular or Periosteal Sarcoma.* This tumor arises from the inner layers of the periosteum, extends along and encloses the shaft of the bone. It has a sharply marked border, and causes a relatively bulky, rounded, fusiform or lobulated tumor, lying outside of the shaft, which long remains intact. Periosteal growths commonly reach a large size. While the integrity of the shaft is usual, the more cellular growths penetrate, erode and destroy the compact bone, and lead to spontaneous fractures. According to the consistence, these tumors are soft, cellular and highly malignant, or firm and fibrous, or irregularly ossified. For a short time there is encapsulation by the periosteum, which may lay down a thin bony capsule. When this is broken through, the tumor invades the muscles, fascia and other soft parts. A characteristic feature of periosteal sarcoma is the bony trabeculae which radiate from the shaft of the bone into the tumor. It does not cause expansion of the shaft as noted in the giant cell sarcoma. Though sometimes quite vascular, these tumors do not pulsate. Fatty and mucoid degenerations may take place, also there may be hemorrhage, necrosis, and cyst formation in the tumor mass.

(b.) *Telangiectatic Bone Sarcoma, Central Osteogenic Sarcoma, Bone Aneurysm, and Malignant Bone Cyst* are terms denoting the same lesion, osteogenic sarcoma arising in the medulla or marrow canal of the bone. There is considerable variation in the character of these central sarcomata, but they all develop from the fibroblast or spindle cell, and are rightly called Central Osteogenic Sarcoma. A peculiar feature of many of the central sarcomata, is their enormous vascularity and absence of any bulk of tumor tissue, and thus the difference in terminolgoy which usually describes the predominant appearance. Some are called Bone Aneurysm because of the very great vascularity of these tumors, which may pulsate and even yield a bruit: also Telangiectatic Sarcoma, because of the extensive development of the blood vessels, which may be widely dilated into large sinuses. Malignant Bone Cyst is the central sarcoma characterized by the complete absence of any bulk of tumor tissue. Also, as in the periosteal sarcoma, there may be more or less production of intercellular substance by the fibroblasts consisting of fibrous tissue, myxomatous tissue or osteoid tissue, and resulting in tumors of a more firm and solid nature. But this seems to be of rather infrequent occurrence, the central sarcomata being more often characterized by great vascularity and lack of real tumor tissue. These sarcomata very early destroy the shaft and infiltrate the soft parts, penetrating the marrow cavity for only a short distance. The absorption of the bone is rapid, and the line of absorption, though irregular, is very sharp. Spontaneous fracture often is the result. In some cases the periosteum is displaced outward, and succeeds in laying down a thin shell of bone. There is not any expansion of the bony shaft in these tumors. The majority of central tumors are not of this type, but are the giant cell type which is relatively benign and not osteogenic. The differential diagnosis between the two is often difficult.

(c.) *Sclerosing Osteogenic Sarcoma* is the type in which there is a production of much

dense, solid bone, sometimes forming the bulk of the tumor. A large portion of the end of a bone is converted into a solid mass of dense ivory like bone, obliterating the marrow cavity, and causing a fusiform swelling. Blood vessels are scanty, and yet metastases occur. This tumor is of a long clinical course, and there are clinical and anatomical grounds for recognizing it as a specific type.

"The structure in general of osteogenic sarcoma varies, as already noted, according to the differentiation of the fibroblasts. In the more malignant tumors, the cells are closely packed together, and of irregular form, some spindle and some round, either one of which may predominate, and the intercellular substance appears only as a scant trace, or is completely absent. Many blood vessels are present. In the more slowly growing sarcomas the spindle and round cells will be much less numerous, the intercellular substance predominating, or even present in great abundance, and will be seen to consist of fibrous, myxomatous, cartilaginous, or osteoid tissue, or any combination of these. The vascularity of these tumors is poor. A particular characteristic of the periosteal spindle cell sarcoma is the production of bone or cartilage."

2. Benign Giant Cell Sarcoma, Chronic Hemorrhagic Osteomeylitis, Giant Cell Tumor, etc., is perhaps the most peculiar and interesting condition affecting the long bones, and has long been a zealously studied subject. It occurs principally in the marrow cavity of the long bones and causes an absorption of the cancellous bone, and widening of the marrow cavity, as the periosteum lays down an advancing shell of new bone. It, therefore, typically causes expansion of the bony shell. In its gross appearance it resembles hemorrhagic granulation material, is a soft, reddish, jelly-like tissue. There is seldom any tendency to invade the soft parts, it never gives rise to metastases, and is generally agreed to be benign. Failure to distinguish between this benign process and the malignant, less frequent central sarcoma, has resulted in the needless sacrifice of many limbs. (The constant benignancy of this tumor has led some observers to class it among the inflammatory lesions of bone, while others do not consider it among the sarcoma but simply use "Giant Cell Tumor" to specify this particular type of lesion.) There is sometimes a good deal of variation in the bone absorption and rate of growth in these tumors, but they have never been known to yield metastases. Rarely they may penetrate the bony capsule and spread through the soft parts. At times they present multiple tumors. In structure the giant cell sarcoma is composed largely of numbers of giant cells of the foreign body type supported by a loose stroma of fibrous tissue and spindle cells. Blood vessels are numerous, and the tumor quite vascular.

3. Myeloma is a specific malignant tumor of the bone marrow. The involvement of the bone is often diffuse, and the development from multiple foci. In structure it is composed of closely packed plasma cells. It is a relatively rare tumor, and a fatal termination is usually the result. (Myeloma has also been known as Myelogenous Pseudoleukemia, Multiple Sarcoma of Bone Marrow, and Mollities Ossium.)

4. Endothelioma, occurring primarily in a bone, has not been permanently established, and the diagnosis requires special caution, and rigid elimination of outlying primary foci, as small carcinomas of the stomach, thyroid, prostate, and particularly the adrenal and kidney. The presence of this tumor as a primary lesion is a rare possibility.

Diagnosis is the real problem with which one has to deal, and the earlier the disease is recognized and treatment begun the greater the prospects of cure. It is unfortunate that most of the recorded cases of bone sarcoma have come to treatment only after the symptoms have been present months or years.

a. *Symptoms.* Trauma is generally thought to play a particular part in the development of the symptoms, but any positive knowledge as to how it acts is lacking. It is certainly true that in many of the histories the symptom of onset begins after some local trauma to the limb.

The first conspicuous symptom of bone sarcoma is pain. It is the "earliest and most important sign of sarcoma of the long bones" remarks Coley, and Bloodgood urges that "in all bone tumors pain is the predominant symptom." The pain is of a deep and boring character and often present weeks or months before there is a palpable tumor, or the x-ray discloses the evidence of a new growth. These patients are not unusually treated for "rheumatism," chronic arthritis, etc. With a previous history of trauma, and a subsequent persistence of marked local pain, there is strong possibility of a bone lesion, and an x-ray ex-

amination should be urged. Too often, perhaps, we fail to make use of this means of diagnosis, probably because there is no obvious appearance of local disease, and accordingly very early lesions escape recognition.

Following the pain by a variable length of time, depending upon the degree of malignancy of the tumor, there is swelling. In periosteal sarcomata this may be very great. In central sarcomata, it is not so large, and usually means that the growth has perforated the bony shell, and begun to infiltrate the soft parts. Exception to this is found in the giant cell sarcoma, which long remains confined to the bony shell, and produces swelling by causing expansion of the end of the bone.

In central growths, or in periosteal which have eroded and destroyed much of the shaft, pathological fracture at times occurs. A fracture received as the result of a very trival injury always suggests the possibility of a bone cyst or tumor.

Impairment of function is also at times a symptom, particularly in the leg, and limping occurs. There is, however, never the muscle spasm and atrophy that is seen in tuberculosis.

These are the symptoms most commonly met with. Trauma followed by persistent, localized pain, and later swelling, without temperature, muscle spasm or atrophy, suggests the possibility of a cyst or tumor. It is to be urged that invariable pain in a bone near a joint, even without swelling, without tenderness, or any other local evidence of disease, should not be treated as "rheumatism, neuritis, neuralgia," etc., but demands to be followed carefully with x-ray examinations.

The duration of the symptoms may have an important bearing on the interpretation of the case. If it is more than two years since the symptom of onset, pain or swelling, or pathological fracture, if the lesion is central, the probabilities are that it is a giant cell sarcoma or a benign bone cyst. In the periosteum, a long duration of symptoms means a slowly growing, less malignant tumor.

b. *X-ray* is an invaluable means of recognizing and interpreting bone sarcoma. Periosteal sarcoma, when well developed, can readily be recognized by the x-ray character, but in very early stage may be easily confused with any chronic inflammatory ossifying periostitis. In the well developed case one sees a rather dense shadow about the shaft of the bone, sharply localized, and what is most distinctive are the trabeculae of new bone formation radiating outward from the shaft into the tumor. The shaft may or may not show evidence of destruction. In the central tumors, the difficulties are more marked, because of the frequency of benign lesions in the marrow cavity. This also is the common location for the giant cell sarcoma, a benign, non-metastasizing, curable disease, and it is highly essential that it be recognized as such. In the central sarcoma, one sees an area in the end of the bone of marked absorption, with abrupt and sharply defined limits, and a thinned out, but not expanded cortex. The periosteum may or may not be laying down a thin shell of new bone. Ultimately, the tumor breaks through the thin shell of cortex, and infiltrates the soft parts. In the giant cell sarcoma there is commonly marked expansion of the cortex without perforation. A bone cyst is the only other sort of lesion that gives anything similar to this picture. In the giant cell sarcoma there is usually a characteristic mottling in the area of rarified bone.

c. *Exploratory Incision*, in order to make a diagnosis, is recognized at the present time as not only justifiable but indicated. Years ago there was some difference of opinion regarding the wisdom of this procedure, but, so far as I can learn, most all authorities are now agreed upon this method. Coley remarks, "I still believe that in cases in which there is any reasonable doubt of the diagnosis, the advantages of an exploratory operation greatly outweigh the disadvantages." Bloodgood was perhaps the first to urge it, and most others have followed the plan. By this method the surgeon is able to inspect the gross appearances of the tumor, and determine the type and possible malignancy. Further, sections may be removed for microscopic study, and a more exact diagnosis obtained. With the findings from these, proper treatment can be more accurately instituted, and the histological type certainly gives us a great help in making a prognosis. The danger from metastases after exploratory operations is slight, and the value of knowing the type of tumor one may be dealing with far outweighs the risk.

The tremendous significance of an accurate diagnosis in sarcoma of the long bones should be well recognized, since it is to determine the plan of treatment, and materially aid in forecasting the result. There is so much variation

in the degree of malignancy of bone sarcoma, particularly when the giant cell type is included, that the plan of treatment can only be indicated clearly after a reasonably sure diagnosis is made. With the diversity of these tumors, their differing manner of growth and bone destruction, there naturally are some cases that will remain obscure in spite of our efforts. The same tumor will vary in different bones, and in different individuals. Pathologists will not always agree in regard to the histology, and it is therefore important that several skilled in the microscopic appearances of tumors be allowed to study the sections. Yet, in the majority of the cases the clinical features, the x-ray characteristics, the macroscopic and microscopic appearances associated will establish an accurate diagnosis.

Treatment depends on the diagnosis, and is planned to meet the needs of the individual case. Immediate amputation in all cases of sarcoma is obsolete treatment, and results in the unnecessary sacrifice of limbs. Ex-articulation, amputation, local resection, curettage, radium combined with Coley's toxins, represent the extremes of treatment.

In periosteal growths amputation is the rule in the majority of cases, and ex-articulation is demanded only in certain very malignant and widely infiltrating cases, or when the tumor involves the upper end of the humerus or femur. The figures of Jenckel seem to conclusively prove that in sarcoma of the lower end of the femur, ex-articulation at the hip joint gives no better results than high femoral amputation. This, I think, may be applied to other bones; when high amputation fails, ex-articulation can promise little or no better results. Regardless, however, of the extent of the operation, the resulting fatality is so high, with a possibility of cure in only 4% of cases, that one form of treatment seems no better than another, and this fact has led some surgeons to favor more conservative methods of treatment. Chief among these is Coley, who treats all periosteal sarcomata conservatively by the use of the mixed toxins of streptococcus and prodigiosus, sometimes combined with radium. In 1919, he reported a series of cured cases, some of which were cured alone by the use of the mixed toxins, others by the combined use of the toxins and radium. Radium alone has cured no cases. He thinks that better results could be gained from this treatment if begun earlier in the progress of the disease. The radium is applied locally after as much of the tumor as possible has been removed. The toxins act as the systemic remedy.

In the treatment of the central growths, exact diagnosis of the type of tumor, the degree of malignancy, and the progress of the disease, are essential in deciding the method of treatment. Any one of several forms of treatment may be indicated by the type of tumor.

In the giant cell sarcoma, curettage of the bone cavity, and cauterization with carbolic acid and alcohol, promises a complete cure in the great majority of cases. When the tumor, as occasionally happens, has broken through the shell of bone (and filled the soft parts), there is no contraindication to the conservative treatment. (Bloodgood). Local resection then may be the most that is necessary, and curettage followed by the use of carbolic acid and alcohol may be sufficient. If not all of the tumor is removed from the soft parts, a local recurrence will take place, but even under these circumstances two or three curettments will eradicate the disease. This tumor never gives rise to metastases, and recurs locally only when incompletely removed, and is therefore benign. Barrie considers it an inflammatory lesion and calls it "Chronic Hemorrhagic Osteomyelitis;" Bloodgood speaks of it as the "Giant Cell Tumor." The great thing about this lesion is to recognize it, and not to confuse it with malignant central osteogenic sarcomas, a differentiation that is by no means always easy.

In the treatment of osteogenic central sarcoma, the lines of procedure are very much as in the periosteal, except that in some cases, seen early, local resection of the bone may serve, and the limb be saved. Resection, however, should be confined to small, slowly growing, encapsultated central sarcomata, which have not perforated the periosteum, and infiltrated the soft parts. In the rapidly growing, cellular tumors, amputation is the indicated treatment. Bue here again prospect for cure is discouraging, and only 8% of the cases survive. Coley's toxins and the use of radium locally after all tumor tissue has been cleared away have cured some cases, and is advocated by by Coley.

Bone sarcomata are perhaps the most highly malignant of all tumors, and metastases occur

early. The majority succumb to internal metastases, chiefly to the lungs. Perhaps the high mortality rates are in part due to the fact that very few cases are recognized in the beginning, and, when first seen, are far advanced with internal metastases already present. Our only chance then, until something more is known concerning the real etiology, must depend on the early detection of the malignant process. Fewer diagnoses of the hazy disease known as "rheumatism," more frequent use of the x-ray, and exploratory incision would be of great advantage.

The Prognosis is generally bad, but the widest extremes are represented in the different sarcomata. The age of the patient, the duration of the disease, its rate of progress, the particular bone affected, the completeness of the operation, and, above all, the structure and essential malignancy of the tumor, must all be considered. Subjects under twenty years withstand the progress of malignancy but poorly. Slow growing tumors are less malignant, but may produce early metastases, or be changed into actively growing tumors. The presence or absence of infiltration of the soft parts is an important question in the prognosis. When present, it complicates the operation and favors the invasion of veins and metastases. Kramer thinks that encapsulation is the most important single factor in the prognosis of most bone sarcomata. Rapidity of growth usually is a very reliable sign of the degree of malignancy. Histological studies are very important in estimating the prognosis, and should always be carried out. In short, the prognosis is best obtained in the light of all data, clinical, x-ray and pathological.

705 *South Tryon Street.*

THE ADVANTAGES AND METHODS OF MAKING LABOR EASY.*

By IVAN PROCTER, M. D., Raleigh, N. C.

Suffering during labor is the worst that the human race has to endure. It is the same as that resulting from actual cutting and irritation of nerve filaments; in surgery and labor alike it produces shock and exhauston. In labor it lowers resistance, increases the chances of infections, doubles the number of forceps operations, prolongs the puerperium and, in general, raises the morbidity and mortality of childbirth. Shock and exhaustion are both reduced to a minimum in surgery by the use of anesthetics and the elimination of pain. Why shouldn't the parturient woman be given the same relief and protection as the surgical patient? Our[1] modern civilization, with its higher educational standards and more protection and environment, has developed a type of nervous system that is very susceptible to painful impressions. Thirty years ago Lusk[2] warned us that: As the nervous organism loses in its power of resistance as a result of higher civilization and artificial refinements, it becomes imperatively more necessary for the physician to guard parturient women from the dangers of excessive and too prolonged suffering.

Today the most reliable statistics show that we are losing nearly one per cent of parturient women and 10% of the babies. Warrick[3] and Bailey having demonstrated that 40 to 50 per cent of the infants that go to autopsy have intra-cranial hemorrhage. Such authors as Kroenig, Polak, Davis and De Lee agree that labor is physiologic in its object but that it is actually pathologic in a large number, if not in a majority, of cases.

I feel that something should be done to protect modern women against the destructive forces of childbirth, and the most sane method of doing this is to eliminate pain and too prolonged suffering.

There are many advantages derived from making labor easy. First, it robs motherhood of its terrors and eliminates both shock and exhaustion. It reduces the chances of sepsis, by clean technique, diminished suffering, and shortened labor. The chances of cerebral hemorrhage in the child are lowered by lessening the time of forcible compression of the head. Post-maturity dangers are forestalled by inducing labor before signs of disproportion develop. The fetal mortality is lowered by controlling the voluntary muscular action of the patient and by timely interference. Finally, the strength of the patient is preserved, the puerperium is shortened, and the convalesence more complete.

The preparation of the patient is a very important step in making labor easy. It cannot be accomplished at the time of labor, but must consist of a thorough study and detailed care throughout pregnancy. Such attention furnishes for labor a well balanced healthy subject from whom all fear and dread has been removed and in whom confidence has been es-

*Read before the Medical Society of the State of North Carolina, at Winston-Salem, N. C., April, 1922.

tablished. Reports from Boston[4] show that proper prenatal care reduces the number of stillbirths 50% and the infant deaths 65%.

The most direct method of making labor easy is by the means of anesthetics. King[5] claims to have used local anesthesia with success. He injects 1.5 c. c. of a 2% novocaine in the superior perineal space and 5 to 10 c. c. of a 1% into the ischio-rectal fossa. We have three general anesthetics, all of which relieve pain with equal satisfaction, but there is a difference in their safety and practicability. Chloroform, according to H. C. Davis[6], of Milwaukee, is the most dangerous on account of its destructive action to liver cells. Potter and others use it extensively and do not report ill results. Ether is usually the better anesthetic on account of its entire practicability, safety, and better relaxing power, which is important at birth. Nitrous oxide is probably the ideal anesthetic where relaxation is not required. Its objections are:—It is more cumbersome to use, more expensive, more dangerous to the fetus, if given continuously, and more immediately dangerous to the mother if not in the hands of an experienced anesthetist. I use chloroform and nitrous oxide in selected cases, but ether in the majority.

The time of beginning analgesia is determined by the amount of suffering and not by the dilatation of the os, as recommended by some authors.

The most ideal anesthetic for the first stage of labor is morphine and scopolamine. This form of analgesia brings relief to about 90% of the women upon whom it is used. Kroenig[7] and Gauss, of Freidburg, use it only in a hospital where the obstetrician is in absolute control of the case. A dark quiet room being selected, the patient is given a thorough examination and prepared for delivery. The initial injection of morphine sulphate, gr. 1-4 to 1-6, and scopolamine hydrobromide, gr. 1-200, (using Merck's fresh sterile solution) is given when labor is well established. The memory test, which consists of showing the patient an object, for example a pair of scissors, and repeating the exhibit in 30 minutes, to see if she remembers having seen it, is used as a guide to other injections. If there is loss of memory, the injection is withheld, whereas if the patient remembers having seen the object, 1-300 to 1-400 gr. of scopolamine is given. The number of injections varies, but usually good results are obtained with 4 doses. A well trained nurse must be in constant attendance and a physician available. As soon as the baby is born, it is essential to remove it to another room so that the mother will not hear it cry, and probably reconstruct the entire labor. Wakefield,[8] of San Francisco, uses morphine scopolamine extensively, and gives gr. 1-6 and 1-150 at the beginning of labor. He uses Merck's crystalline scopolamine that has not been exposed. A half to three-quarters of an hour after the initial injection, depending upon the severity of the pains, he gives scopolamine gr. 1-200, and the patient is soon under the influence of the drug. All subsequent doses depend on the requirements of the individual patient. Individual susceptibility and severity of labor pains both play a part in deciding the time of subsequent doses. There is no rule, the patient being given an injection when she needs it, and here experience is very helpful. In general, it may be said that after the second dose, 1-300 gr. is required about every 2 hours. The characteristics of a patient under scopolamine are flushed face, dry throat, dilated pupils and a partial loss of consciousness. There are many modifications of morphine scopolamine analgesia but it seems necessary for each man to work out a technique that gives him and his patients the best results.

I use it in the majority of cases, and give the initial dose of morphine gr. 1-6, scopolamine gr. 1-100 to 1-200, when labor is definitely established, and the patient begins to suffer. This injection usually puts the patient into a dazed condition with incoherent speech, sleep between pains and partial loss of consciousness. After labor progresses for an hour or more and the effects begin to wear off, the scopolamine is repeated, using gr. 1-200 to 1-400. After the second or third dose, the average patient will have reached the second stage when the morphine scopolamine can, if necessary, be supplemented with a whiff of chloroform during the pains.

The memory test of Gauss[9] is unnecessary and cannot be relied upon. Blue babies are unheard of if morphine is not given after initial injection. There is no definite prolongation of labor if the drugs are used just to relieve pain and the patient is not too thoroughly narcotized. This procedure, I belive to be the safest, most efficient, most useful, and most important method of making labor easy. As Mocher[10] puts it, scopolamine is the greatest

boon in obstetrics since the advent of anesthesia and asepsis.

The next important method of making labor easy is shortening the process. I am in sympathy with the principle of shortening labor in the individual case when there is an indication, but not as a routine. I believe, too, that the indications are far more frequent than our text books and some professors teach. Too severe or prolonged suffering is just as much an indication to shorten labor as is malposition or obstruction. Shortening such labor by skilled hands yields much better results than allowing the patient to drag on to completion by her own efforts. The method to be employed depends upon the individual case and the circumstances surrounding it.

The timely induction of labor is a means of shortening the process and making it easy, in that it prevents post-maturity complications. Post-maturity with a normal pelvis creates the same obstetric problem as contracted pelvis with a normal baby. To Reed[11], of Chicago, we owe a great deal for developing the modern use of hydrostatic bags. Like other instruments, if improperly used, they may be a menace to child-bearing women, but if skillfully used in the individual cases, they may be a means of reducing maternal and fetal morbidity and mortality.

The prophylactic forceps operation, described by De Lee,[12] about a year and a half ago, is a means of making labor easy. De Lee's technique is no doubt executed with success in his hands, but it is too radical for most men, and I know of no one who is using it as described. Many obstetricians do a prophylactic forceps operation in individual cases when nature is not making sufficient progress in delivering the child. The secret of success comes with gentleness and proper cephalic application, but most important of all is knowing when to interfere. If interference is too early, the obstetrician does the damage; if too late, nature does it. Important points in the operation are: Absolute asepsis; surgical anesthesia; ironing out the vagina and perineum; accurate cephalic application; removal of the forceps as soon as the chin can be controlled through the perineum and the modified Walcher position. The cases that are best suited for operation are those that have reached the perineal stage. When it is necessary to apply forceps before this stage, the use of axis traction[13] instruments gives better results, in that they allow the head to follow the course which corresponds to the normal mechanism of labor.

Occiptoposterior[14] positions are among the most common obstetric complications and cause a large percentage of prolonged painful and difficult labors. Bill corrects the malposition by a modified Scanzoni procedure and delivers with forceps. I have found podalic version, using Potter's[15] technique, to be the best treatment in most cases, because the head often goes back to its original position after rotation and version must finally be resorted to. In many cases such as those where the head remains at the pelvic brim, whether due to malposition or slight contraction, insufficient or misdirected pains, and in toxemia where it is essential to have a quick delivery with a minimum amount of pain and shock, podalic version seems to be the best treatment. It has been my pleasure to spend a week with Dr. Potter, of Buffalo, and it would well repay any obstetrician to see him work. I am not an advocate of routine podalic version, but this form of delivery has a much wider field than that in which we have been in the habit of applying it.

The important features in Potter's technique are:—Absolute asepsis; surgical anesthesia, using chloroform and the same anesthetist with all cases; relaxation of the perineum and vagina by the "ironing out" process, and the modified Walcher position; rupturing of the membranes high up with retention of the amniotic fluid which aids turning; bringing down and delivery of both feet together; gentle extraction without haste at any time: delivery of the scapula before any attempt is made to deliver the shoulders; rotation of the posterior shoulder to the anterior position and delivery as such; the lack of external pressure until after the shoulders are delivered; slow delivery of the head in compete flexion, the patient in the modfied Walcher position.

E. P. Davis summarized efforts at making labor easy by saying, "There is no logical reason why woman should suffer during labor. Suffering, both physical and mental, produces surgical shock. It increases the danger of puerperal complications and delays convalescence. The suffering can be relieved with perfect safety to both child and mother."

The methods of shortening labor are sometimes called meddlesome midwifery, and for some men rightly so; but[16] if we can do these operations without danger or with very much

less danger to the patient than if we let nature take her course, then we must conclude that such interference is not only justifiable but advisable. Let every man be honest and recognize his limitations; for one man watchful waiting, for another analgesia, anesthesia and methods of shortening labor.

This is such a large subject it would require several hours to go into a detailed description of the different methods of making labor easy. However, I have tried to present the subject in a broad manner and hope that from the discussion we may gain something that will be helpful in our struggle for better obstetrics.

BIBLIOGRAPHY.

1 & 8. Wakefield, W. Francis B. The Amer. Jour. Obstet. and Dis. of Women & Chil. Vol. LXXVII. No 5, 1918.
2. Lusk, Nitrous Oxide Oxygen Analgesia and Anesthesia in Normal Labor and Operative Obstetrics. (4)
3 & 4. Rucker, M. Pierce, Sou. Med. & Surg. Jan. 1922, Vol. 84, No 1, (5).
5. King, R. W., Surg. Gynec. & Obstet. 1916. XXIII, 615.
6. Davis, H. C., Nitrous Oxide-Oxygen Analgesia and Anesthesia in Normal Labor and Operative Obstetrics.
7. Holt, William L. Scopolamine Morphine in Obstetrics. Amer. Jour. Clin. Med., May 1907.
9. Proc. Royal Soc. Med. 1918, XI, Sect. Obst. & Gynec. I.
10. Mocher, Geo. Clark, Sou. Med. Jour. Vol. XV., No. 1 (38).
11. Reed, Chas. B., Amer. Jour. Obstet. & Gynec. Oct., 1920. Vol. 1, No. 1, (34).
12. De Lee, Joseph B. Amer. Jour. Obstet. & Gynec. October. 1920, Vol. 1, No. 1, (24).
13 & 14. Bill, Arthur H., Amer. Jour. Obstet & Gynec., Jan. 1922, Vol. 3, no. 1 (65).
15. Potter, Irving W., Amer. Jour. Obstet. & Gynec., March 1921, Vol. 1, No. 6 (560).
16. Reed, Chas. B., Amer. Jour. Obstet. & Gynec. Oct. 1920, Vol. 1, No. 1, (24).

THE SUBMERGED TONSIL.*

By D. L. RAWLS, M. D., Suffolk, Va.

For the past few years there has been a good deal of study and research work, and volumes upon volumes written on the subject of the tonsil.

We must admit, however, as specialists in other fields of medicine and surgery, that we are more or less inclined at times at least, to have fads or hobbies. It is true, no doubt, that there have been indiscriminate operations on the tonsils, possibly by the skilled as well as the unskilled surgeons. On the other hand, think of the hundreds of chronically infected tonsillar victims who have passed through our offices, undetected and unrelieved. They were not only suffering with throat symptoms and head complications, but constitutional symptoms as well. While that has been more or less the condition in the past, it is not quite so bad today and we hope that in the near future it will still be better or not at all.

Medical science has been making wonderful progress in all branches of medicine, especially for the last few years, and the throat specialist is no exception. With this increased knowledge, it should encourage us one and all to take a fresh hold, so to speak, that we may diagnose our cases in their incipiency, thereby not only relieving suffering humanity, but preventing many premature deaths. All of us well know with all our modern equipments and accessories it is often very difficult to say when a tonsillectomy is indicated and when it is not.

The type of faucial tonsil I wish to speak of briefly is the submerged variety. This is the type that many physicians, internists as well as specialists, look on as harmless, and accordingly advise against a tonsillectomy. As a matter of fact the importance of the tonsil as a focus of infection does not increase with its size, nor has it any relation to it.

To understand and appreciate more fully the local and systemic conditions as the result of tonsillar infection, I wish to run over hurriedly some of its clinical anatomy. The faucial tonsil is situated in a triangular depression on the lateral wall of the fauces. This depression is called sinus tonsillaris and is bound anteriorly by the anterior pillar which contains the palatoglossus muscle, posteriorly by the posterior pillar which contains the palatopharyngeus muscle. The pillars meet above to unite with the soft palate. Inferiorly they diverge and enter into the tissues at the base of the tongue and the lateral wall of the pharynx respectively. The outer or external wall is composed of the superior constrictor muscle of the pharynx. This anatomical relationship or construction, which partially or completely envelops the tonsil, is not only important from a diagnostic point of view, but from a medical and surgical as well. In every act of deglutition, these muscles come into action, especially the superior constrictor muscles of the pharynx thus compressing the tonsil. Grober cites authorities who claim that

*Read before the Seaboard Medical Association in Norfolk, Va., December, 1921.

the compression of the muscles forces food and bacteria into the crypts, rather than out of them. The tonsil is composed of from eight to twenty of these crypts or tubular depressions. They almost invariably extend the entire depth of the tonsil to the capsule on its outer surface. Clinically, the crypts seem to be the source of the greatest amount of local and constitutional disturbances, as they often become filled with food, tissue, debris and pathogenic bacteria. This is especially true of those submerged or capped over by adhesions and overlying membrane, as the plica supra-tonsillaris and the antero-inferior portion of the tonsil which is covered by the plica tonsillaris. It may be stated as a general law in physiological pathology, that mechanical obstruction to the drainage of any secreting cavity tends to result in local morbid processes and in toxic or infectious manifestations in remote parts of the body.

Writers and authors have classified the tonsils in various ways, as to pathology and morphology. For practical purposes I wish to classify them with regard to their anatomic relationship to the adjacent structures, especially to the tonsillar pillars, into three types or groups. The first type is the submerged tonsil, or the tonsil that is partly visible; the second is the tonsil presenting in front of the tonsillar pillars; the third is the very large obstructing and pendulous tonsil. The first type is most important as well as most serious, because it is the one that is most overlooked. It is very easy to advise for or against a tonsillectomy in the second and third type, but it is more difficult in the first variety. In taking the histories, do not let the patients mislead you by saying they never had any throat trouble. They may be earnest in their statements and never have had any trouble with their throats or they have had sore throats in the past and have forgotten them, and last but not least, they may have a horror of an operation. While it is important to take the history in every case, we should not stop there, for every tonsil should be examined thoroughly. Drs. Lillie and Lyons, of the Mayo Clinic, in a series of 200 cases suffering with myositis and arthritis secondary to chronically infected diseased tonsils of the submerged or just visible type, found that only 57.7% of the patients gave a history of tonsillitis, leaving 42.3% of the cases, almost half, with no tonsillar history at all. I think this is one of the most important points in all of our tonsillar work.

We all know that quite frequently it is very difficult to explain and make some patients understand a diseased condition, when they have had subjective symptoms in that immediate area. How much more difficult it is to make one comprehend a pathological condition, when they claim they have never had any trouble in that region! That is what we laryngologists often have to confront, especially in dealing with the submerged type of tonsil.

When the diagnosis has been made, it is needless to say what to advise. There are various and sundry methods and techniques in removing submerged tonsils, but the essential point is to remove it completely with the least amount of trauma to the surrounding parts.

BRIEF REMARKS ON SINUSITIS, WITH REPORT OF CASE.*

By N. J. GOULD, M. D., Norfolk, Va.

Sinusitis, and we of course are concerned with the accessory cavities of the nose, means inflammation of the sinuses. As is all inflammatory conditions, so here do we find that sinusitis may be, from the clinical standpoint, either acute or chronic, from the pathological, suppurative or non-suppurative.

It is, I believe, the consensus of opinion that the underlying factor in any form of sinusitis is defective or total absence of ventilation in the sinuses. No matter what may be the particular exciting cause in any given case, the subsequent course is invariably due to interference with proper aeration and consequent drainage of the sinus.

We know that the sinuses are lined by ciliated columnar epithelium, with the motion wave of the cilia directed towards the ostia. Investigators have conclusively proven that the cilia will dispose of bacteria or any other foreign matter that may enter a sinus.

Supposing, however, you have a septum so deviated as to alter the respiratory phase in so far as the nose is concerned, can you not see how easily other disturbances may follow? You have a change in the circulation of the nasal structures—congestion or hyperaemia, and, if extended over a long period of time,

*Read before the Section of Ophthalmology and Oto-Laryngology of the Norfolk County Medical Society, April 28, 1922.

hypertrophy of the turbinates. This in turn immediately occludes either partly or completely the normal openings of the sinuses into the nose, hence stagnation of the normal secretion in the sinuses. It follows almost as a necessary corollary, that the mucosa of the sinus must suffer thereby, both in structure as well as function. What is more logical to deduct than, given a sinus with a mucous membrane whose natural function is impaired, that micro-organisms, once they gain entrance into such a sinus, would simply thrive and give rise to various types of sinusitis first mentioned. Or, let us take an individual who is a subject of frequent attacks of rhinitis. Here likewise do we have a similar series of events: repeated engorgement of nasal mucous membranes, corresponding changes in the sinuses, furnishing a soil fruitful and inviting for the growth of infective micro-organisms.

We readily recognize that the fundamental principle in the causation of sinusitis is mechanical—interference with ingress of air and egress of secretion. There are, however, a number of contributory or exciting factors that obtain in the causation and character of sinusitis.

We are aware of the importance of climate. I am sure everyone of you has had the experience of hearing a patient state how much better he felt during a short stay in New York, or during the summer months at Virginia Beach. On the contrary, many find the local climate much more suitable.

A not inconsiderable role do micro-organisms play in sinus infection. In fact the progress of the disease is often entirely dependent upon the particular invading organism. We know, for exmaple, that the influenza bacillus and the pneumococcus give rise to most virulent infections. I do not, however, wish to leave the impression that it is the organism that determines the severity of the disease, for in reality it is due to the virulence rather than the type of organism.

That dental caries is responsible for a large number of cases of sinus disease, mainly the antrum, is universally conceded. As to its frequency, there seems to be a divergence of opinion. Generally, however, we consider the incidence of dental etiology about 20%. Permit me to digress a moment to mention that occasionally the teeth become infected as a result of primary antrum disease. Several cases of this nature were recently reported in the medical literature. A relatively small percentage of sinus infection owe their origin to a general systemic infection, mainly syphilis. But there is as yet no confirmatory evidence to support the idea that either syphilis or tuberculosis is ever primarily involved in sinusitis.

I shall leave the discussion of etiology with the mentioning only that a few cases of sinusitis may be attributed to direct trauma. The paucity of this condition impels me not to dwell upon it at greater length.

Sinus disease is accompanied by variations in its symptomatology. We are chiefly concerned with two—headache and "throat-clearing." By that I mean that it is the one or the other that brings the patient to us. It is the pain of the one and the annoyance of the other, for which the individual is compelled to seek relief.

The headache is indeed so variable that it does not always determine for us the character and seat of the infection. It is not constant; it is remittent; it does not confine itself to one area. It may be a dull, true aching kind, oftentimes described by the patient as a heavy feeling. And again, it may be so excruciating as to occasion loss of appetite, insomnia, nausea, and even despondency—a type of headache that often fails to respond to the most energetic treatment. No part of the head is immune from pain. While the headache is admittedly frontal in the large majority of cases, the other regions may suffer as well, and it is not uncommon to have patients complain of severe occipital and parietal pain. Quite a number will assert that their headache is most intense on bright, clear days, and they are more comfortable when it is cloudy. I recently had one patient tell me that the only time she is free from headache is during her menstrual period.

The clearing of the throat is one of the most annoying conditions with which a person has to contend. Not only is it exceedingly troublesome, but quite embarrassing as well, particularly if in the course of his daily occupations the patient is thrown in contact with many people. We can not deny that presence of pus in the nose is not necessarily indicative of sinus disease, or absence of purulent discharge means a healthy sinus. Yet, I can not help but feel that persistent clearing of throat

with the expectoration of purulent material is pathognomonic of sinusitis.

After the patient has come to consult you about one or the other of the above symptoms, you will elicit the information, in the course of taking the history, that the patient may have occasional attacks of vertigo, dizziness, which becomes more marked when stooping or during rapid change of the position of the head. Many individuals will complain of laryngitis in varying degrees, due to irritation caused by the nasal secretion. Then again, the sense of smell may be impaired or totally destroyed. An offensive breath and gastro-intestinal disturbances may manifest themselves either as a result of the swallowing of purulent secretion or through absorption. No part of the body is free from becoming affected.

Let me again emphasize that it is the headache and the expectoration that brings the patient to your office. But I am not unmindful of the fact that there are two other conditions from which many suffer, and I shall mention them. Though their number be but few, their significance is unquestionably equally as, if not more, serious; hence, their importance.

I have already alluded to one, when I stated that any part of the body may be affected through the absorption of toxins. In other words, the sinus may become a focus of infection, producing constitutional disturbances. They indubitably occupy a position inferior to the teeth and tonsils; their responsibility, however, can not be made light of. Visual disturbances consequent upon abnormal conditions in the sinuses, and I am using this phrase advisedly as I shall presently point out, is attracting greater and greater attention the more we investigate the relation between ophthalmology and rhinology. This visual disturbance may be so slight as to be disregarded, but how many cases of extreme impairment of vision, even blindness, have been considerably helped, even cured, by curetting the ethmoids and opening of the sphenoid! This is a field replete with vast possibilities for study and investigation. It is my belief, that we have barely scratched the surface.

The literature describes many cases, where the individual having lost his vision had been greatly benefited by opening of the sphenoid, which was apparently, and let me stress this, *apparently* found normal, with perhaps a slight hypertrophy of its mucosa. That is why I used the term "abnormal condition" rather than infection of the sinus, for you may restore vision, though no evidence of infection be present. In most cases the history and physical examination will reveal the diagnosis. I wish to emphasize the fact that the mere presence of pus in the nose is not indicative of sinus trouble. The immediate reappearance of pus, however, is absolutely pathognomonic of sinusitis—a very important point to remember—since in an ordinary rhinitis, the nasal mucous membrane is incapable of secreting purulent material under your very eyes, as it were, and it is quite obvious that pus must be concealed somewhere.

It is always advisable, almost indispensable, to have radiograms of the sinuses. A careful study and proper interpretation of plates will assist you in deciding whether or not sinusitis exists. Often, even the type and character, suppurative or non-suppurative, and what particular sinus is involved, will be disclosed. Suction is of inestimable value, not only as an aid in diagnosis, but as a therapeutic agent as well.

Now we come to the question of treatment and I must say at the very outset that there are no specific methods which can be applied to all cases. Every patient presents a problem for individual study, and must be dealt with in accordance with the factors peculiar to that case.

We can not treat the patient who comes to us with severe headache of several days' duration, as in acute sinus infection, precisely in the same manner we treat one, who has been suffering for months, perhaps, years, as in chronic cases with acute exacerbations.

Nasal cavities with extensive polypoid formation are treated differently from an antrum diseased as a result of a tooth infection.

When repeated attacks of rhinitis, the precursor of sinusitis, are due to infected tonsils (you will admit not an unusual condition), the measure resorted to to obviate them is naturally tonsillectomy, while the mucosa of the frontal sinus only moderately hypertrophied as a result of hyperaemia of the middle turbinate, which impinges upon the ostium, may be restored to normal by one or more applications of adrenalin to the turbinate.

You would not put to bed a man suffering from acute frontal sinusitis and who is improving under treatment—a man whose very

existence depends upon his daily labor. A hypersensitive woman, however, similarly afflicted, is probably best cared for if confined at home. It is quite likely she would go to bed of her own accord.

My object in repetition is to emphasize that each case must be studied painstakingly, and the remedial measures applied to be in accordance with the special needs of the individual. Only one word more with reference to treatment—and this a word of caution. When operative interference is deemed imperative, conservatism should be the guiding principle.

I am cognizant of the fact that this subject was very inadequately presented. It is so vast that to attempt elaboration of any one of the aspects of sinusitis would require a great deal of time. You must have noted that I did not even refer to pathology or complications. The case that I am about to report will direct your attention to the possible complications of sinus infection, and will also embody much of what I have so cursorily covered in my brief remarks.

Report of Case.

A white schoolboy, age 17 years, came to get relief for severe right frontal headache, from which he had been suffering continuously for six days. No therapeutic measures administered by his family physician had given him any freedom from pain. Aspirin was the only drug that enabled him to fall asleep for short periods.

History: His family history is unimportant. The patient had to clear his throat of purulent material a number of times during the day for the past 3 years. Had frequent attacks of headache and occasionally dizziness. He complained of a very offensive breath. Had all his teeth extracted about a year prior to his seeing me, and is now using dental plates.

About 10 days ago (March 1922), patient had a cold followed by severe headache on the left side, lasting 2 days. Three days later he had a similar headache on right,—which had not left him.

Examination revealed that both nasal cavities were just bathed in creamy pus, more on the left side than right. The septum had a high deviation on the left side, while the right middle turbinate was wedged in between the septum and lateral nasal wall. No sooner was the pus mopped away, when it reappeared immediately. One could elicit definite tenderness upon pressing the inferior wall of the frontal sinuses. Adrenalin did not have the slightest impression upon the right middle turbinate, and suction did not reach the right frontal sinus. Radiography confirmed the diagnosis that the two antra and frontals were filled with pus.

Progress: The anterior third of the right middle turbinate was removed to facilitate drainage of the right frontal sinus. Patient's headache practically disappeared within ten minutes after the partial turbinectomy and emptying of the frontal sinus by suction. Did not pack the nose. That same evening patient had a chill followed by a rise in temperature to 102 degrees. The right upper lid became slightly oedematous the following morning: oedema increased during the next two days, but diminished on the fourth, persisting, however, throughout the entire course of the disease. A week following the turbinectomy, there was slight exophthalmos of the right eye, and since the temperature range was between 99 degrees and 104 degrees, it was deemed advisable to open the right frontal sinus. A modified Killian was performed on both frontals, on account of finding the septum between the right and left frontal partly destroyed, and pus in both. The ethemoids were curetted and right sphenoid opened. The purulent secretion was diminished within 24 hours. The patient, however, continued to grow worse, and exophthalmos became more marked. There was an undoubted orbital abscess which was incised and pus evacuated, two days following the Killian operation. Patient continued to retrogress and died 3 days later.

During the two weeks following the turbinectomy, the patient was free from headache or other pain. He complained only now and then of pain in right lower region of the neck, and over cardiac area, where an unquestionable dry pericarditis was found. Only once, four days after the turbinectomy, did he complain of a deep seated pain in the eye. He became semi-conscious and slightly delirious the day preceding and comatose the day of his death. At no time was there the slightest evidence of meningeal irritation; no rigidity of neck; no change in reaction of reflexes; no gastro-intestinal disturbances.

Save for the right exophthalmos, which was downward and outward, there was no abnormality in the eyes.

The temperature range, as already stated

was from 99 degrees to 104.5 degrees, pulse 96 to 120 and very much faster the last two days of his life. The respirations were normal on some days and rose to 36 on others. This is interesting, for we often find this irregularity in cerebral abscess. It was increased to 50 and 60 the last 48 hours. No evidence of pulmonary involvement.

Laboratory: Leucocyte count averaged 18,000, with polymorphonuclears 85%. Repeated blood cultures were negative. Wassermann negative.

Spinal fluid under very slight pressure, clear, and a cell count of six. Globulin negative. Stained smears negative for bacteria.

Cultures from sinus showed pneumococcus growth, smears showed very small diplococci, some forming short chains. Many were intracellular and quite a few extracellular.

Urinalysis negative.

It is regrettable that no autopsy could be obtained.

331 *Dickson Building.*

VENEREAL DISEASE FROM THE ARMY STANDPOINT*

By M. C. SYCLE, M. D., Richmond, Va.

Chief of Urology and Syphilis, Ft. Harrison General Hospital No. 25.

The examination of drafted men showed that five men came into the army with venereal disease for every one who contracted it after he was in the army; and the one who contracted it in the army, probably, was infected in a civil community outside of military control. Venereal disease is, therefore, not a military problem or war epidemic: it is a civilian problem, taken over by military authorities for the period of war only where civil communities have failed to do their duty. The draft and physical examination of men resulted in digging underneath the sod of our civil life and showing that, out of sight in every man's town, there has been going on yearly a waste of manhood, womanhood and childhood by the ravages of these preventable diseases: diseases whose cause we know, whose germs we can see and identify through the microscope; diseases which we can locate in an individual; diseases which are transmitted in the course of a business which has no possible use or value, by carriers who have to advertise and can be easily detected.

Abolishing the red light district is not the end of the clean-up of the community. Boarding houses, assignation houses, cafes, dance halls, massage parlors, certain amusement parks, and "for hire" automobiles are the refuges of clandestine prostitution. They must all be watched. Legislation is needed to control these places. What is effective is not a spectacular raid now and then, but constant vigilance on the part of public officers and Citizens' Associations. Each attack on prostitution, by driving it more and more to cover, reduces the number of individual exposures to venereal diseases. Such a program of suppression often causes some sentimental or ignorant persons to rise up and say, "You are fanatical," "You are hounding the poor unfortunate prostitute," or "The lid ought to be tipped up a little so that everybody can have a good time and so that business will be better." These are absurdities. Prostitutes themselves, after they have had a glimpse of decent life in a detention house, say that "There is no greater wrong you can do a girl than to allow her to remain a prostitute."

Only in trashy novels and "movies" is the prostitute's life a rosy one. During my practice I have had the opportunity to come into contact with a great many of them. In reality, to quote her own words, "It is hell." What kind of good time do you create for recreation-loving men and women by "tipping the lid?" It may be a gay time for the night, perhaps the morning after, and months later of disaster and disease. An open town means better business for some doctors and hospitals and undertakers. It means prosperity for the pimp and landlords who live on the earnings of these women. But for legitimate business it means higher taxes, lowered efficiency, less buying power, and an infinitely poorer community. Finally, all prostitutes are diseased and should be isolated. What we need is well-equipped detention houses for the prostitutes and then give them a chance to become better women where their health may be repaired and they may be given a chance to learn a useful occupation—it is much better than to put them in jail or pest houses.

Education forms a very important part. The State and City Boards of Health will gladly furnish pamphlets that these unfortunate women may read; also books on sex education and motion pictures are good things and help to play a very important part. The man must

*Read before the Officers' Medical Society, Fort Harrison General Hospital No. 25.

This article is published with authority of the Surgeon General of U. S. Army.

also be made to show his false position. Clinics for free diagnosis should be well established. The druggists are playing a very important part in the cure of venereal disease and much praise should be given the drug stores. They are refusing to sell the patients patent medicines and referring them to the doctors. The drug stores are not carrying in their stock "Knox-it" and other such patent drugs. The law has not made it a crime to be infected with venereal disease, but it does require persons infected to take treatment from a reputable physician and be reported by number to the State Board of Health. Every precaution should be taken to prevent the spread of this disease and to give the public a square deal. If a person is spreading the disease, the law then requires the name of such person to be reported. Most cases of venereal disease in the army were brought in from civil life and the army played a great part in their cure and in giving instructions to patients for use after their discharge.

Prostitution is considered, quite properly, immoral or sinful. But it has been attacked very little from a standpoint of epidemiology as other diseases have been attacked. During late years the medical man and social worker have accumulated much data concerning these diseases. It is estimated by some that there is a total of 2,500,000 in this country. At any time the annual number of new cases is from five to nine hundred thousand. Eighty per cent. of our women are operated on as a result of venereal disease. There are also many cases of blood, kidney and prostate infection, pus tubes in women, blindness at childbirth, including also the nervous involvement of both sexes, such as loco ataxia and paralysis. A large percentage of young men in the army were syphilitic but did not show any lesion. Later, under the strong strain of the front-line trenches, they were found useless. As these men had no acute manifestations, they were accepted in the army, but under the stress and strain of extensive military training they did not show the physical condition or development of a good American soldier. A careful examination of these men was made and they were found to have a four-plus Wassermann.

The American soldier of today is practically an American boy away from home, plus the uniform and plus the proud spirit. These young men come from all walks of life,—from the country and city alike. They come from the good, bad and indifferent homes. The army has certainly taught the young men with venereal diseases the dangers of these diseases, and those who were discharged, still having an infection, are now taking a course of treatment as a result of what they have been taught by the medical man in the army. With proper care and treatment, there is no doubt that these cases can be cured. The disease, if properly cared for, is not nearly so horrible as the word "syphilis."

I did not travel abroad during the war but, from what I can learn, there was less disease in this country among the United States soldiers than any other country, although the percentage in this country was very heavy.

In the United States, two hundred and fifty red light districts have been closed in the last ten years. One hundred and fifty of these have been closed since 1916. Think what the closing of these districts means! We consider that 96% living in such districts are diseased. The annual cost of supporting prostitution in the United States is about $628,750,000. This amount takes in the economic loss caused by venereal infection in the general population, the annual sum paid direct to prostitutes, the annual economic loss on insane, detention of prostitutes, cost of blindness due to venereal disease and, in addition to these, large expenditures for courts, police, jails, hospitals and clinics. Concerning the number of cases of venereal disease contracted before and after enlistment, I wish to repeat that before enlistment the number was five to one after enlistment.

A recent report that I have received from the Surgeon-General's office regarding the number of cases recorded in the army during the war, with the number of days lost, is as follows:

Total Aamy.	
Cases,	357,696
Days,	6,804,818
United States.	
Cases,	284,742
Days,	4,745,450
Europe.	
Cases,	57,195
Days,	1,748,067

Three per cent. of the military draftees, whose examination blanks first reached the Surgeon-General's office in Washington, had a venereal disease when they reported at camp.

The record for each State follows:

State	Per Cent.
Oregon	0.59
Idaho	0.76
Utah	0.79
Washington	0.86
Montana	0.95
South Dakota	0.95
California	1.15
Wisconsin	1.21
Wyoming	1.22
New Hampshire	1.22
Nevada	1.40
Nebraska	1.53
Vermont	1.53
New Jersey	1.55
Minnesota	1.57
Connecticut	1.60
Iowa	1.63
Massachusetts	1.63
Arkansas	1.73
North Dakota	1.75
New York	1.82
Alaska	1.90
Michigan	1.95
Maine	2.00
Colorado	2.12
District of Columbia	2.14
Kansas	2.38
Illinois	2.44
Pennsylvania	2.62
Rhode Island	2.66
New Mexico	2.68
Delaware	2.78
Ohio	3.24
Maryland	3.28
Louisiana	3.32
Indiana	3.33
Arizona	3.40
Missouri	3.52
Kentucky	3.77
Tennessee	3.80
North Carolina	3.90
West Virginia	4.00
Mississippi	4.05
Oklahoma	4.50
Texas	
Georgia	5.60
South Carolina	8.04
Virginia	8.45
Alabama	8.68
Florida	8.90

This diagram plainly shows that the large proportion of venereal diseases in the army originated not in the cities near the army camps but in the home towns from whence the men came and the cities through which they passed on the way to camp. The amount of venereal diseases contracted by the men after putting on uniform, when they were under military regulations, is astonishingly small.

Let us now think of the war's end. Many of the war buildings, war jobs and institutions have gone into scrap, but every item in the program of venereal disease control is as necessary to successful peace as to successful war. Don't scrap your patriotism and community spirit.

From the number of men examined during the war we certainly found out that a great number were not properly treated. It is quite true that syphilis itself is not a fatal disease, but it is certainly true that it does shorten human life and its many complications show a great increase in the death rate. It is a disease whose unfortunate influences may extend to the innocent as well as to the guilty, and it is also seen in high society as well as in the lower classes. Experience does not show that this disease is less frequent at the present date since we have abolished the red light district, nor is the disease less frequent than in former years, even though there are many new discoveries for its cure. We have noted many death certificates signed as a result of tuberculosis, loco ataxia, paralysis, insanity, aneurism, cerebral hemorrhage, but, had we gone deeper into the history of these cases, we would have found the direct cause was syphilis. When an examiner finds a prostitute infected with such disease, she should be isolated and there remain until pronounced cured by her physician. I believe that public opinion will compel compulsory treatment. I believe in true prophylaxis is to be found mainly the education in the enlightment of the public and the ignorant on matters of this subject. They are beginning to realize that this disease and insanity are far too numerous. They have learned that heredity plays a very important part in human affairs. All over the country forces are uniting and concentrating their attention upon certain questions. One of these is the protection of the home. View the marriage relation from the standpoint of the offspring, wife, home and public health, is there no necessity for further safeguarding the most sacred of all human relations? Shall we consider everyone competent to marry who meets the mental requirements? Shall the syphilitic marry, destroying the health and happiness and the life of one he has sworn to protect, and to bring into this world a deformed, defective and deficient offspring? Shall the victim of gonorrhea marry, put out the eyes of his child, destroy the mother's health and bring her to the operating table, as we so often note?

There are those who will not believe that the existing conditions warrant any attempt to further limit marriage or guard the marriage relation. There are those who believe that the wife must take her chances. There

are those who seem to consider that the unborn child has no implied rights to a good inheritance. There are those who think that the State has no vital interest in the physical and mental efficiency of its citizenship. There should be no peace with prostitution, no truce for the tenderloin, and no armistice with venereal disease.

106 *West Grace Street.*

ACUTE APPENDICITIS—ACUTE SALPINGITIS—ACUTE PYELITIS DIFFERENTIAL DIAGNOSIS.

By FRANK D. WORTHINGTON, M. D., Charlotte, N. C.

The writer expects to introduce nothing new on this subject as it has been fully dealt with innumerable times but, since it is a problem that the general practitioner as well as the surgeon frequently confronts and since the treatment of the first is radical and the others conservative, perhaps it would not be amiss to refresh our minds on the subject from time to time.

It is a well recognized principle now that, as soon as a troublesome appendix is diagnosed, its removal is strongly indicated. For the woman an early diagnosis is not only important at all times but on some occasions almost vital.

On the other hand, acute salpingitis is best treated conservatively and, where the condition is found on exploration when an acute appendix has been suspected, the value of drainage is doubtful and a secondary operation is almost assured.

Acute pyelitis assuredly is not benefited by operation and, to a patient already suffering from infection, the sequelae and discomforts of an operation are added. These few facts alone are sufficient to make the differential diagnosis of importance and we will attempt to give some of the points significant in this differentiation.

1. *Race.*—Appendicitis must be much more strongly considered in the white than in the colored. The burden of proof is on the man who says a colored woman has appendicitis in view of our knowledge of the frequency of gonorrhoeal infection in that race.

Pyelitis may occur in both with equal frequency.

2. *Age.*—This point is of not so much benefit. Both acute salpingitis and acute pyelitis are more common in the child-bearing age than at any other time. On the other hand, acute appendicitis also is common at this time but is a little more frequent in the early years of this period. In those under the age of puberty, both appendicitis and pyelitis are apt to occur but the appendix is the more frequent offending organ. In those beyond the menopause, appendicitis and acute salpingitis are rare. Pyelitis must be strongly considered.

3. *Marital State.*—We must give the benefit of the doubt to the unmarried woman where acute salpingitis is suspected although it must not be lost sight of. Certainly acute appendicitis is the most frequent of the three conditions. When the patient is married, the condition of the husband's health must be considered and pregnancy be confirmed or ruled out. With pregnancy, acute pyelitis is common and acute salpingitis not rare. Attempts at producing abortion frequently lead to salpingitis and the history is hard to obtain. Careful examination of the pelvis usually confirms suspicion in these cases. A bloody discharge with soft patulous cervix and fundus slightly enlarged are usually found. The adnexae may or may not be considered pathological as will be shown later. Appendicitis occurs during pregnancy but not so frequently as at other times. However, during this time it often runs a much more rapid course and for this reason an early diagnosis is most important. During the early months, the operation can usually be done without disturbing the uterus and, if the operator uses proper care and skill, abortion is rare. At this time the disease also is not fulminating. On the other hand, during the latter months of pregnancy the large fundus makes appendectomy more difficult, the course is fulminating, peritonitis develops rapidly, and the condition can be handled unsatisfactorily by drainage. Following this the onset of labor is almost certain and the cervix usually dilates without any pain to the patient, the first hint of the condition being a rupture of the membranes or a bulging perineum. The child is usually dead and the death of the mother is almost certain. Early diagnosis and immediate operation are therefore most important in appendicular trouble with pregnancy.

4. *History.*—Too much care cannot be taken in obtaining a history in any acute abdomi-

*Read at the meeting of the Medical Society of the State of North Carolina, in Winston-Salem, April 1922.

nal trouble and, when the differential diagnosis must be made between the three conditions taken up in this paper, the history is often the leading clue. Too often this is neglected.

Reviewing first appendicitis: There have probably been previous attacks and vague digestive disturbances. An appendix seldom becomes very acute, the first time it is noticed. The onset is insidious and vague at first. Pain is an ever-present symptom and is usually at first diffuse in character, later becoming localized over the appendix region. There is usually at first pain in the epigastrium and such an authority as Dr. J. M. T. Finney states that he always doubts the diagnosis of acute appendictis if there is no history of general abdominal pain and particularly epigastric pain in the beginning of the attack.

As the attack progresses, pain becomes more localized and frequently the patient can put one finger on the painful sore spot and definitely locate McBurney's point. Nausea is almost constant and the same may be said of vomiting; the latter is seldom persistent. Constipation is a more frequent complaint than diarrhoea.

In acute salpingitis there may or may not be previous history of menstrual disturbances and pain in the pelvis. The possibility of recent infection is to be considered.

The onset is more abrupt than in appendicitis and may be ushered in with a chill. The pain complained of is usually colicky in character and at all tmes confined to the lower abdomen. As the condition progresses, the patient complains definitely of pain in the pelvic region, usually bilateral. When told to point to the most painful spot, she puts her hand all over the lower abdomen and, if she does localize on the right side, the region is usually below McBurney's point. Nausea and vomiting may be present but this is not usual. It is rather unusual.

In pyelitis, previous history is very important. Again, the presence of a pregnancy is important because of the frequency of pyelitis as a complication. Usually a history of urinary disturbances such as dysuria and polyuria can be obtained, but this is not constant. The onset of acute illness is abrupt and often associated with a chill. Nausea is frequent and vomiting not uncommon. Pain is often entirely absent but at times may be as severe as that of a typical renal colic. The pain is more apt to be dull in character and confined to the lumbar region. Its presence on the left side is a great help in making a differential diagnosis but pyelitis is more frequent on the right.

5. *The physical findings* are most important and no detail should be overlooked. Because of the frquency of other conditions outside the abdomen producing symptoms in that region, the general survey of throat, lungs, etc., should be routine. Coming to the more important examination, we will take up first the question of pulse, temperature and respiration, urine and leucocytes.

(a) In acute appendicitis the temperature is elevated but not markedly. Seldom is a temperature over 101 seen with an appendix unless peritonitis has developed. This is not true of pyelitis where the temperature may reach the highest limits, nor is it true of salpingitis where it usually will at some time during the day go quite high.

(b) Elevation of pulse with appendicitis is common and may be more significant than temperature. The pulse in pyelitis is relatively slow compared to the temperature. In acute salpingitis it is elevated with the temperature.

(c) Respirations are more limited with appendicitis than with other conditions and may be elevated for this reason. An extensive pelvic peritonitis may also limit the respiratory excursion of the abdomen. Pyelitis has no influence in this respect.

(d) The urine examined should always be a catheterized specimen and even then is not diagnostic when most important. It is a frequent occurrence to have no pus cells or R. B. C. in the urine during an early pyelitis and almost as frequent to find a few in appendicitis and salpingitis. A large quantity of these organic sediments should arouse suspicion, at least. Ureteral catheterization is a great aid but has it disadvantages: first, it is time-consuming and, if the findings are negative, the patient has been put through an unnecessary examination; second, in my opinion it is unwise to do it during an acute flare-up of a pyelitis unless its duration is for a number of days without signs of subsiding.

(e) The leucocyte count is an aid. In acute appendicitis we do not expect a count of over 20,000 unless pus is present. In acute pyelitis it may very from a moderate increase to a tremendous leucocytosis, depending on

the extent of ureteral obstruction and the subsequent tension of pus in the kidney pelvis. In salpingitis the count varies from slightly above normal to very high. A relative polymorphonuclear increase is present at all times.

(f) The general appearance of the patient is helpful. The patient with acute appendicitis is the most quiet of the three and protects herself, particularly the abdomen, in every way possible. The pyelitis case may be restless and is usually flushed. She may feel quite well. The salpingitis case does not look as sick as temperature, etc., would indicate.

(g) On abdominal examination, the first things noticed are the extent of respiratory movement and the amount of distention. The former has been taken up. As to the latter, general distention is most common in the woman with salpingitis. It is not rare with pyelitis.

On palpation the tenderness which may or may not be found with pyelitis is over the kidney affected and in the lumbar region. To me the tenderness obtained on deep palpation of a kidney is not very significant. There is slight if any muscle spasm. In appendicitis the tenderness and muscle spasm are pretty well localized over McBurney's point and the former can frequently be indicated with one finger. If there is a peritonitis, of course tenderness and muscle spasm are diffuse, but even in these cases sudden pressure or release of pressure on the opposite side of the abdomen will cause referred pain over the appendix. In salpingitis, the tenderness is usually just above the pubis, bilateral, but more pronounced on one side. The upper abdomen is markedly free from tenderness and muscle spasm anywhere is not extreme.

Pelvic examination may be misleading. A bulging cul de sac or easily palpable enlarged tubes are almost diagnostic but they are often absent and the only thing to substantiate our diagnosis of acute salpingitis is perhaps an adherent retroflexed uterus and adherent ovaries with possibly a little thickening of the adnexae.

In conclusion, if I have at all given the true findings, it is evident that the paths for error are numerous and the differential points fine. It is only by paying strict attention to all of them that we avoid mistakes and even then we will make them. After all, the points in evidence for each is, in our mind, that we must frequently, in the final analysis, resort to our own "feeling" in the matter. It is that faculty which distinguishes the extraordinary surgeon from the average and is in part inborn and in part cultivated, the ablest teacher being our mistakes.

THE RELATION OF THE GENERAL PRACTITIONER TO VENEREAL DISEASES.*

By JAMES A. KEIGER, M. D., Greensboro, N. C.

For the past five years we have heard and read much about the venereal diseases. We have been told that gonorrhea and syphilis are more prevalent than any other infectious disease, except measles; that probably fifty per cent. of the abdominal operations on women result from gonococcal infection usually contracted innocently; that a large percentage of the blindness in children is traceable to infected mothers; that still-births and early deaths are due to syphilis. These facts, coupled with the loss in physical power on the part of those who are infected, place the venereal diseases in the front rank of medical problems.

Considering the wide-spread prevalence of these infections, I believe that every medical man, specialist, as well as general practitioner, is vitally interested. For there is no field of medicine that does not at some time or other encounter a syphilitic or gonococcal infected patient. If, then, the various specialists meet with these cases, does not the general practitioner meet with them more so, since he is a combination of them all?

The analogy is not perfect, but I believe we might look upon the general medical man as the clearing station for all the casualties. For, to him the wife comes when she has some "female" or bladder trouble; to him the mother brings her children when they are not doing well; and, to him the boy or young man reluctantly reports when he realizes that he has been indiscreet. Thus we see that the physician has the first opportunity to detect a gonorrheal or syphilitic infection in the wife, father, mother, or children.

Having made the diagnosis, and there is no reason why he cannot, for the laboratory of the State Health Department is always ready to aid, he must decide which cases he can and will properly treat, and which he will refer. I use the term "properly" advisedly. For per-

*Read at the meeting of the Medical Society of the State of North Carolina, in Winston-Salem, April 1922.

sons infected with gonorrhea or syphilis are seriously ill and deserve to be treated with the same care and skill that is given to the typhoid, pneumonia or diphtheria patient.

To discuss in detail any of the various plans of treatment would take entirely too much time, so I shall make only a few general remarks, relative thereto: first, the general practitioner must, at least, treat the acute cases, for there are not specialists enough in the State to handle them if they are all referred. But let me add that, unless he is willing to examine his patients, he should let them go to the druggist and quack as they have been doing in the past; second, refer the chronic cases to the specialist and do not tell them that they are incurable; third, do not be in a hurry to treat ulcerations on the genitalia with caustics, but rather consider all such cases as syphilitic until proved otherwise by the microscope or other laboratory tests; fourth, do not tell a syphilitic that three or six "shots" is sufficient, for, in the light of our present knowledge, we do not think it is, in fact, know that it is not in the vast majority of cases.

What, then, is the relation of the general practitioner to venereal disease? I think it can be answered by saying that it is the same as that towards tuberculosis, cancer, malaria, etc. And the solution rests on co-operation of all the medical men, giving their best efforts to diagnose early and then treat with skill and care.

McAdoo Building.

HYDROPS DYSPNEA NOT RELIEVED BY ASPIRATION.

A Report of Case.

By ALEXANDER G. BROWN, JR., M. D., Richmond, Va.

PATIENT: Aet. 68, white, male, banker.

Had never been sick in bed, but had been a mild diabetic for twenty years. By intelligent management of his diet, the glycosuria was controlled and his weight was maintained below the normal for his height. For months prior to my examination, he had been having attacks of tachycardia and arrhythmia. Apparently these attacks were related directly to two factors:—(1) exercise and business excitement, and (2) stomach dysfunction. Frequently the heart attacks occurred in the morning before breakfast. This was attributable to over-indulgence at the evening meal the preceding day, and a failure of the stomach to empty its contents promptly. While examining this patient, a heart attack was produced by deep pressure in the epigastrium:—a regular-heart became arrhythmic and rapid.

The patient went to Europe on a business trip. Had an attack of influenza in London. Before completely recovering, went to Paris and had an attack of acute cardiac dilatation and passive congestion of the lungs. His Paris physicians were forced to bleed him and to use intravenous injections of digitalis and intramuscular injections of camphor in oil. After a stormy time he improved and returned to America and, on December 24th, 1921, was seen again by me, a few hours after his arrival in Richmond.

The heart rate was 115 per minute. There were intermissions in the systoles, and fibrillating auricles and pulmonary edema. The patient was ordered to bed. For six weeks, under large doses of digitalis, the heart seemed to improve in rate and rhythmic regularity, but apparently never diminished in diameter. After six weeks the respiration began to show an increased rate. For a while, it was difficult to say that there was hydrops in the pleural cavity but, as the shortness of breath increased, it was easy to make out the accumulation of serous exudation in the right pleural sac. An aspiration was considered but deferred until the accumulation became somewhat oppressive. February 21, 1922, an aspiration was done and 32 ounces of serous fluid taken from right sac. This relieved the patient but, although the heart was digitalized, it did not improve. He was repeatedly tapped on the right side and, toward the end of his illness, twice on the left side. Toward the termination of his illness, the air cells apparently failed to reinflate and he died with practically no fluid in either sac, but suffering with great dyspnea, resulting from atelectasis of both lungs and, at the end, auricular flutter.

This condition of atelectasis, meaning incomplete expansion of the lungs, is usually brought about by causes interfering with the inspiratory act, by obstruction. Any enlargement of the membranes or structures in the vestibule of the pulmonary passage may be a cause and, also, any inflammatory secretion, associated with bronchitis, broncho-pneumonia and whooping cough, or foreign body, may produce atelectasis. In addition, one sees air-less areas in patients about to die when the respira-

tory muscles fail to function, resulting in collapse. But in this case this atelectatic condition was due to pressure from without the lungs. The compression of the lungs from dropsical accumulation in the pleural cavity was too great in this case of long standing diabetes. As a result of this air-less state in both lungs, although the fluid was drawn promptly, there was marked air hunger which eventually, together with cardiac fatigue, brought the patient to a fatal termination.

He died by respiratory failure; the heart pulsations were evident after respiration failed.*

Stuart Circle Hospital.

*Reference: Diseases of the Chest, etc., Norris Landis.

Public Health

Notes From the State Board of Health Laboratory.

Intestinal Diseases: A new outfit is now ready for distribution for fecal specimens in suspected cases of typhoid fever, dysentery, etc. This outfit includes a small bottle of 30% glycerine for receiving the specimen. The use of the glycerine does not inhibit the organisms sought for but does inhibit somewhat the growth of other bacteria. Fecal specimens submitted in this way, stand shipment quite well and the percentage of positive findings should be materially increased.

We have also been studying the use of certain new culture media and have improved the technique of examining these specimens. Last year several typhoid carriers were found and, with increasing vigilance on the part of the physicians, we may expect to locate many more this summer. Now that many of the "larger" factors in the spread of typhoid fever have been removed, much more attention must be paid to the carrier. Write for our new outfit.

Mail Service: The laboratory now has a special postoffice box, and we are doing all that we can to speed up our service. Again we urge the doctors to address all communica-

tions to the LABORATORY and not just to the HEALTH DEPARTMENT.

AUBREY H. STRAUS,
Director of Laboratory.

Proceedings of Societies

The South Piedmont Medical Society

Held its regular semi-annual meeting at South Boston, Va., April 18, under the presidency of Dr. E. Barksdale, of Lynchburg. The program included many interesting papers. In the intermission between the two sessions, supper was served at Garland Hotel. The following officers were elected: President, Dr. Geo. B. Barrow, Clarksville; vice-presidents, Drs. J. B. Lacy, Nathalie; R. P. Kelly, Lynchburg; J. J. Neal, Danville; and Ray A. Moore, Phenix; secretary-treasurer, Dr. Geo. A Stover (re-elected), South Boston. Lynchburg was selected as the next place of meeting, the date being set as November 21, 1922. The subject for general discussion at this meeting will be "Chronic Cardiac Lesions." This will have the following subdivisions and leaders:

Etiology and Symptoms, by Dr. D. P. Scott, Lynchburg;

Pathology and Diagnosis, by Dr. F. C. Rinker (honorary member), Norfolk;

Treatment and Prognosis, by Dr. T. N. Davis, Lynchburg.

The Medical Society of Virginia, Maryland and the District of Columbia

Held its Spring meeting in Warrenton, Va., May 17th, under the presidency of Dr. Stephen Harnsberger, of that place. In spite of a rainy day, the meeting was a success, and those in attendance enjoyed an "old time country dinner." The following officers were elected:—President, Dr. William L. Lewis, Kensington, Md.; vice-presidents, Drs. J. H. Ferguson, Clifton Station, Va., and E. J. Horgan, Washington, D. C.; recording secretary, Dr. Dr. Wm. T. Davis; corresponding secretary, Dr. Jos. D. Rogers; treasurer, Dr. Robert Scott Lamb, the last three being of Washington; membership committee, Drs. J. W. Bird, Sandy Spring, Md.; W. Allen Griffith, Berwyn, Md.; Hunter H. McGuire, Winchester, Va.; Arthur Hooe and Jas. A. Gannon, Washington, D. C.; and Wm. C. Welburn, Ballston, Va.

The next meeting is to be held in Washington, D. C., November 15, 1922.

The Northern Neck Medical Association

Met in semi-annual meeting at Warsaw, Va., May 25, 1922, Dr. M. C. Oldham, Lancaster, president, and Dr. R. E. Booker, Lottsburg, secretary. Besides a good attendance of the Northern Neck physicians, Drs. A. B. Hooe and G. B. Gill, of Washington, D. D., and Drs. G. B. Harrison and Mason Smith, of Fredericksburg, Va., were present and read very interesting papers.

The Association went on record as endorsing the road bond issue.

R. E. BOOKER, Secretary.

The Medical Association of the Valley of Virginia

Held its Spring meeting in Harrisonburg, May 25, Dr. C. E. Conrad, of that place, presiding. The attendance was good and the papers were interesting and instructive. It was decided to hold the next meeting at Clifton Forge, on September 28. The secretary, Dr. Alex. F. Robertson, Jr., reports 94 active members of this Association.

The Virginia Graduates Nurses' Association,

At its annual meeting in Bristol, the latter part of May, selected Richmond as its meeting place for 1923, and elected the following officers:—President, Miss L. L. Odom, of Sarah Leigh Hospital, Norfolk; vice-presidents, Miss Bettie Wingfield, Bristol, and Miss Florence Bishop, Portsmouth; treasurer, Miss Margaret Cowling, University; and secretary, Miss Heard, Richmond.

American Medical Association.

The St. Lois meeting of the American Medical Association was up to standard in every way. There was a registered attendance 5,174, only 22 of whom were from Virginia, as follows: Drs. A. L. Gray, J. Shelton Horsley, McGuire Newton, E. H. Terrell and I. J. Haynes, of Richmond; Southgate Leigh, E. C. S. Taliaferro and R. D. Glasser, of Norfolk; T. Allen Kirk, D. E. Remsberg, John O. Boyd, S. S. Gale and Jos. T. McKinney, of Roanoke; Jos. T. Buxton, L. E. Stubbs, E. M. Newsom and F. D. Willis of Newport News; L. O. Crumpler, of Danville; F. V. Fowlkes, of Burkeville; L. A. McAlpine, of Portsmouth; C. B. Bowyer, of Stonega; and T. C. Firebaugh, of Harrisonburg.

San Francisco was selected as the place of meeting for the 1923 meeting and Dr. Ray Lyman Wilbur, of Stanford University, California, was selected president-elect.

Secretary's Announcement

District Medical Societies.

In the past two and a half years I have attended the meetings of three district medical societies and three meetings of the State Society. Speaking as a former teacher, gatherings of the district societies are far superior in their educational values to those of the State society. The reason for this is not difficult to locate. Fifty men furnish an audience sufficiently large to stimulate those on the program to their utmost efforts yet sufficiently small for each one to get the maximum benefit from the reading of the paper and the following discussion. There are no extraneous matters like reports, meetings of governing bodies, politics, or laymen secretaries to break in and consume precious time. The meetings of these small organizations to advance their professional standards, to serve the interests of the public health, mean more to the people of the State than any larger meetings even of the same man. Papers read at these meeting are of an unusually high order and they provoke discussions in which a large number of the men present participate.

The organization of district societies throughout the State will greatly stimulate the professional and scientific interests of the profession and the public health.

G. H. Winfrey, Secretary-Treasurer.

The Truth About Medicine

During March the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

Abbott Laboratories:
- Izal
- Izal Disinfectant Powder

Intra Products Co.
- Van Sterile Solution Mercury Benzoate 1 Cc.

Merrell-Soule Co.:
- Powdered Protein Milk-Merrell-Soule

Parke, Davis & Co.:
- Pertussis Vaccine
- Pneumococcus Vacine (4 Types)
- Streptococcus Vaccine Polyvalent (Scarlatina)
- Typhoid-Paratyphoid Vaccine (Prophylactic)

Seydel Manufacturing Co.:
- Benzocoine-Seydel

Winthrop Chemical Co.
- Iothion
- Iothion Oil
- Sabromin
- Sabromin Tablets 8 Grains

Acriflavine-Heyl:
Proflavine-Heyl:

These products are now marketed by the National Aneline & Chemical Co. and the Council has continued the acceptance for New and Non-official Remedies under the new firm name.

Book Announcements

Practical Infant Feeding. By LEWIS WEBB HILL, M. D., Junior Assistant Physician to the Children's Hospital, Boston; Assistant in Pediatrics, Harvard Medical School. 8vo. 483 pages, illustrated. Philadelphia and London. W. B. Saunders Company. 1922. Cloth, $5.00 net.

To have a satisfactory working knowledge of infant feeding, it is absolutely necessary one should have a fair understanding of the chemistry of metabolism. To this end, Dr. Hill has given us a book that seems to be practical without being superficial, and scientific without being tiresome.

Disclaiming allegiance to any particular "school" of infant feeding, the author has amalgamated the best points taught in this country and abroad, interpreting them through his own practical experience in the Boston Children's Hospital and private practice. Boston is probably the greatest pediatric center of America and this new book measures up to its highest standards of excellence.

The Eighteenth Amendment and the Part Played by Organized Medicine. By CHARLES TABER STOUT, New York. Mitchell Kennerley, 489 Park Avenue, New York City, Publisher, 1921. 12 mo. Cloth, 216 pages. Price, $1.50.

The Law of Vital Transfusion and the Phenomenon of Consciousness. An Account of the necessity for and Probable Origin of the Development of Sex and the Development of the Conscious State in the Evolution of the Organic World, with a Preliminary Statement of Fundamental Cosmical Principles. By CHARLES J. REED. Occidental Publishing Company. San Francisco, Cal. 74 pages, Cloth, Price, $1.50.

Vital Statistics in North Carolina.

Advance figures from the N. C. Bureau of Vital Statistics, compiled by Dr. Frank M. Register, show that during 1921 there were 59,000 more births than deaths. During the year there were 87,000 births and only 28,000 deaths reported. This gives North Carolina a birth rate of 33.4 for 1921 against a death rate of 11.6.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 JUNE, 1922 No. 3

Editorial

The New Requirements in the Medical Life.

The new requirements in medical life are those of expansion. The new hour, with all the new demands, calls for a great activity of physicians in matters of the intellectual, governmental and social life of the community. Physicians should meet the new requirements of post-war period with eagerness and with enthusiasm. Physicians of the state should feel the call to take an active part in problems and questions that are about us on every hand awaiting solution. No longer should doctors stand aside and permit others to assume full charge of problems arising in the life of the community. The medical men of counties and cities in the state should be leaders in the march of progress. The doctors of Virginia should be a potent group, trained as they are in the daily study of human-needs, for successful leadership in battle against the forces of the country that would break down the bonds of society.

The doctors of Virginia should ever bestir themselves to an active and daily interest in the city, county and state government and its agencies. The doctors of every community should cultivate an earnest purpose to be of service to their community in the effort to secure "good men" to run for public office. The strictly political doctor should be discouraged. But every encouragement should be given, by the profession, to all of the craft who for the public weal, show patriotic activity in the direction of political events. Now, is the hour; let the mind think on the country's problems; and let physicians do what they can on every side to encourage proper persons to run for offices and for representative positions in government. No matter how excellent the laws, unless the administration of the laws is in the hands of the most trustworthy and efficient, the standards of government will be in danger. So it is urged that physicians and medical men of all sorts show a lively and personal interest, as they know so well the personnel of their communities, in bringing out for office capable, trustworthy and effective candidates for office.

Respect for Law.

The hour has come in Virginia, as in the other states of the Union, when a new enthusiasm and interest should be aroused for the respect and observance of the law. On every hand one observes the evil tendencies which are brought about by laxity in public sentiment over the breaking of the law. Doctors of the state should stand for the principle of obedience to the law. They should be foremost in activities that quicken the public conscience to a stricter observance of the law, and should be ready to demand of public officials the application of the strictest vigilance in the enforcement of the law which they have sworn to observe.

The wheels of progress are obstructed in the political advancement of a state often, by the failure of the electorate to send to the legislative hall representatives of the best grade. The very life of a people is bound up in the transactions of the legislative assembly. The state's welfare may progress or it may retrograde by this token; much depends upon the vision, the intelligence and the trustworthiness of the men who formulate and pass upon legislation. This is true because the legislation enacted affects and influences the life and body of every person within the confines of the state. Now is the time to think and plan. Less than two years is before us again, before the legislature will assemble for the discussion and action on problems of Virginia. Let the doctors interest themselves in raising the standards of our representatives to the highest level of efficient statesmanship.

Good Roads.

The physicians of this state are deeply interested in good roads and no apology is of-

fered for again urging in these columns daily interest in the development of permanent highways in Virginia. In this one great need is rapt (wrapped) much of health, education, social and religious life of our people. Why must Virginia wait decades for what others get in a shorter time? For many years, since the automobile has come into the economical fabric of the nation, there has been this agitation for roads that will accommodate winter travel as well as summer use, and Virginia, last winter, was all but "mud bound" for two months. This should not be so. It was so in colonial days that for a long time during the winter months transportation over country roads could be accomplished only on horse back. Last winter, every winter, in certain sections of the state, the same conditions existed. This should not be so, and the doctors, together with the people of every community, should exhaust every possible means to arouse a public sentiment which will pull Virginia out of the mud at once and for all time.

Who pays the taxes? Is there a greater tax than that exacted by a mud road: a tax on health, life and limb; a tax on education and social and religious well being of the whole people?

Proprietary Vitamins.

The popular and scientific interest that has been aroused over the more recent studies of the food elements, which has brought forward the importance of the vitamins to health and strength, has produced a natural result in human experience. The effort to commercialize and to sell this new knowledge has taken form. On the page of the daily newspaper one sees now-a-days large and impressive advertisements declaring the usefulness of some vitamin-product. In view of this evident danger it may be well to quote the conclusions presented by Hess, Moore and Calvin* and suggest that interested readers read the article in full:—"It appears from the foregoing experiments that the process of manufacture and subsequent aging of the concentrated vitamin products have not caused as much deterioration of the antineuritic as of the antiscorbutic properties. All the products studied were very low in antiscorbutic properties and, while all of them contained water soluble B, they had a much lower potency than fresh yeast, with the possible exception of the Yeast Vitamine-Harris preparation.

"The discovery of the vitamins, their classification and their relationship to nutrition, both in health and in disease, must be considered one of the great contributions to medical science. However, the claims that one or all of the known vitamins can be prepared for dispensing in a concentrated form which will not be affected by drying, aging and oxidation are, in the light of our experimental work, open to great question.

"It is becoming more firmly fixed in the minds of leading investigators that, except to meet specific indications, as in times of famine and certain economic upheavals, such as war, the best method of obtaining sufficient vitamins is through a proper selection of foods. Vitamins should be obtained from the dairy, the grocery and the market, not from the drug store."

*J. A. M. A., May 13, 1922, Vol. 78, No. 19, page 1441.

Syphilis of the Lungs.

This condition, once thought to be very rare, is now-a-days more commonly recognized. The known frequency of pulmonary tuberculosis, together with the similarity of the physical signs of some forms of tuberculosis and syphilis of the lungs, is the probable explanation of the fact that syphilis of the lungs is not oftener differentiated. Visceral syphilis has, however, come more to the front in recent years, because of the more accurate history-taking, the Wassermann test, and x-ray studies.

Syphilis of the lungs is difficult to diagnose. The known presence of syphilis, by the Wassermann test, physical signs and the history, together with pulmonary signs of pathology will hardly be sufficient evidence to invariably conclude that luetic pathology alone is responsible, or that tuberculosis of the lungs is not present in a syphilitic patient. Consolidation of areas of lungs and the auscultation of inflammatory secretion in adjacent regions is one form of its pathology. This is shown in the apices of lungs or may appear along the roots. It is a rather fixed opinion, that the apices of lungs are rarely involved, but some have observed signs pointing to this condition. This is particularly true when there is a mixed infection of tuberculosis and syphilis.

Diagnosis of syphilis of the lungs always presents rather uniform difficulties, because of the fact that many of the symptoms and signs suggest the more common pulmonary

tuberculosis. The cough, some fever, some loss of weight, expectoration, in a patient, continuing for a long period of time, naturally suggests tuberculosis. But repeated examinations of the sputum, absence of typical physical findings, unfavorable x-ray examination, and the positive Wassermann examination, may point out the real diagnosis.

News Notes

The Medical College of Virginia Finals

Were of more than usual interest this year, owing to the large attendance of the alumni and the entertaining in their honor. More than 300 alumni registered attendance. An entertainment by the student body was given on the evening of May 27th, the affair being a burlesque on the faculty and the Richmond Academy of Medicine and Surgery. Acrobatic and comic features were also introduced. The following day the baccalaureate sermon was preached by Dr. H. D. C. Maclachlan, of Seventh Street Christian Church. The alumni presided over by Dr. H. U. Stephenson, of Toano, Va., held several meetings and the future welfare of the school was the all-absorbing theme of discussion. Many plans were advocated, some of which will receive further consideration. Dr. Manfred Call, Richmond, was elected president of the Alumni Association for the coming year, and Dr. John Bell Williams, also of Richmond, secretary.

On Monday afternoon, there was a street parade of the faculty, alumni, students, and nurses of the hospitals under the supervision of the Medical College of Virginia. This was followed by a class reunion and a meeting of the alumni and reunion dinner. Commencement exercises were held at the Strand Theatre on Tuesday evening, the 30th, and these were followed by a dance at Jefferson Hotel. Dr. J. M. T. Finney, of Johns Hopkins Hospital, Baltimore, was the commencement speaker, his subject being "Opportunities and Responsibilities of the Doctor." The president, Dr. Stuart McGuire, made the annual report of the school, after which diplomas were awarded to graduates by Dr. E. C. L. Miller, Dr. J. A. C. Hoggan, and Mr. W. F. Rudd, deans, respectively, of the schools of medicine, dentistry and pharmacy. There were twenty-seven graduates in the school of medicine, eighteen in the school of dentistry, twenty from the school of pharmacy, and eleven from the nurses' training department. Mr. Frederic B. Morlock, superintendent of the hospital division, presented diplomas to the latter.

The following hospital appointments were announced:—

Memorial Hospital, Richmond—Drs. Mary B. Baughman, E. P. Bray, and E. J. Kane, of Richmond, W. R. Gardner, Star, Va., R. H. Harrington, Major, Va., and undergraduate W. R. Payne.

City Home Hospital, Richmond—Undergraduates J. T. Graham, H. L. Gwynn and R. P. Hawkins.

City Jail Hospital, Richmond—Undergraduate B. J. Atkinson.

Grace Hospital, Richmond—Undergraduates J. G. Davis, Jr., and F. E. Handy.

Johnston-Willis Sanatorium, Richmond—Dr. J. B. Woods, Jr., Richmond, and undergraduate R. S. Kyle.

Penintentiary Hospital, Richmond—Undergraduate W. P. Bittinger.

Retreat for the Sick, Richmond—Drs. Joseph Coates and W. E. Dickerson, Danville, Va., and P. G. Fox, Drewryville, Va.

St. Luke's Hospital, Richmond—Drs. J. B. Loving, Culpeper, Va., and C. D. Nofsinger, Fincastle, Va.

Sheltering Arms Hospital, Richmond—Dr. Margaret Nolting, Richmond, and undergraduates J. N. Robertson and A. A. Wilson.

Soldiers' Home Hospital, Richmond—Undergraduates H. H. Menzies.

Stuart Circle Hospital, Richmond—Drs. J. E. Taylor, Chase City, Va., B. P. Seward, Isle of Wight, Va., and undergraduate H. L. Horton.

Virginia Home for Incurables, Richmond—Undergraduate S. P. Hileman.

George Ben Johnston Memorial Hospital, Abingdon, Va.—Undergraduate R. H. Edwards.

St. Vincent's Hospital, Norfolk, Va.—Dr. L. L. Sawyer, Jr., Norfolk, Va.

Central State Hospital, Petersburg, Va.—Undergraduate A. B. Sloan.

Mt. Regis Sanatorium, Salem, Va.—Undergraduate Fielding Combs.

Western State Hospital, Staunton, Va.—Dr. M. H. Harris, Pendleton, Va.

Providence Hospital, Washington, D. C.—Dr. C. M. Caravati, Richmond, Va.

In addition to the seventeen named for hospital appointments, there were ten graduates in the department of medicine, as follows:—Drs. R. F. Cline, Stephens City, Va.; W J. Crawford, La Grange, N. C.; R. H. Isaacs, Baltimore, Md.; W. J. Ozlin, Dundas, Va.; G. W. Parson, Stony Creek, Va.; C. F. Ridge, Edgar, N. C.; L. O. Snead, Virgilina, Va.; C. W. Tucker, Norfolk, Va.; P. F. Whitaker Kinston, N. C.; and T. M. Winn, Palmyra, Va.

The National Tuberculosis Association

Sometime ago began a new and important phase of its work in an attempt to increase the quantity and character of research work in problems related to its own field in the United States. For this purpose it appropriated $20,000 and appointed a small committee to expend these funds to the greatest advantage. This committee decided that the best use of these funds would be in assisting researches already under way that held the greatest promise of increasing the practical knowledge of physicians dealing with tuberculosis. The value of Roentgenography in determining the presence of pulmonary disease having long been recognized, one of the researches was an effort to establish the x-ray and clinical findings in the chest of the normal child up to ten years of age. For this problem, the following roentgenologists and clinicians were appointed:—Drs. H. K. Pancoast and H. R. M. Landis, of the University of Pennsylvania; Drs. F. H. Baetjer and C. R. Austrian, of Johns Hopkins University; and Drs. H. K. Dunham and K. D. Blackfan, of the University of Cincinnati. These physicians have now sumbitted their reports to the Association and may be of interest to many.

The Medical Society of the State of North Carolina,

At its meeting in Winston-Salem, in April, had a registered attendance of 542. The program included 67 papers and an enthusiastic meeting was held. Dr. H. A. Royster, of Raleigh, presiding. It was decided to hold the 1923 meeting in Asheville, and the following officers were elected:—President, Dr. John Wesley Long, Greensboro; vice-presidents, Drs. Frederick M. Hanes, Winston-Salem; Thos. C. Johnson, Wilmington; and Benj. L. Long, Hamilton; secretary-treasurer, Dr. Lewis B. McBrayer (re-elected), Sanatorium.

The following were named as delegates to the Norfolk meeting of the Medical Society of Virginia:—Drs. B. C. Willis, Rocky Mount; S. N. Harrell, Tarboro; E. P. Gray, Winston-Salem; J. W. Tankersley, Greensboro; and B. C. Nalle, Charlotte.

The N. C. Public Health Association,

Held in Winston-Salem, just prior to the meeting of the State Society, elected Dr. Alexander C. Bulla, Winston-Salem, president, and Dr. Frank M. Register, Raleigh, secretary.

Married.

Dr. Robert Graham Wiatt, University, Va., and Miss Marian C. Myers, formerly of New York, but recently of Blue Ridge Sanatorium, Charlottesville, Va., May 5.

Dr. Willard Strickland, Wendell, N. C., and Miss Cleo Mariner, Pocomoke, Md., May 10, at the Nurses' Home of Stuart Circle Hospital, Richmond. Dr. Strickland graduated from Medical College of Virginia in 1919, after which he served an internship at Virginia Hospital, this city.

Dr. John Terrell Scott, of Lynchburg, Va., and Miss Vivian White, of Denver, Colorado, June 14. The groom received his diploma in medicine from the University of Colorado, the same day.

Dr. John W. Devine

Has returned to his home in Lynchburg, Va., after attending clinics in Chicago and Rochester, Minn.

Dr. Fayette A. Sinclair,

Newport News, Va., as the Knight of Warwick, won the second place among the successful knights in the tournament staged during the Virginia Historical Pageant in Richmond.

Dr. W. Reid Putney,

Of Littleton, N. C., has been a recent visitor at the home of his father-in-law, Dr. Geo. C. Callaway, at Norwood, Va.

Dr. C. S. Lawrence

Has been elected president of the Lion's Club, recently organized in Winston-Salem, N. C.

Dr. J. Allison Hodges,

Richmond, Va., by invitation delivered an address before Warwick County Medical Society, the middle of May.

Members of Raven Society, U. Va.

The following members of the third year medical class of the University of Virginia have been elected to membership in the Raven Society, one of the honorary scholarship organizations of the University: Monroe Jacob Epting, Jr., Savannah, Ga.; Robt. Battaile Hiden, Pungoteague, Va.; Vincent William Archer, Black Mountain, N. C.; and Caldwell Jackson Stuart, Washington, Va.

Dr. Herman Pifer

Has returned to his duties at St. Luke's Hospital, Richmond, after a short visit to his home near Strasburg, Va.

Dr. C. C. Hudson,

Health officer of Richmond, Va., recently spoke on the subject of tuberculosis before the student body of Randolph Macon College, Ashland, Va.

Dr. W. Armistead Gills,

Who has been attached to the U. S. naval station at Guam, has been ordered home, and is expected in Richmond about the middle of June.

Dr. R. A. Martin,

City Health officer of Petersburg, Va., in May attended the National Conference of State Health Officers held in Washington.

Hill Top Sanatorium,

Danville, Va., was formally opened Sunday afternoon, June the 4th. The building has a capacity of thirty-four patients. It is constructed so as to provide for bed patients under hospital conditions, while ambulant patients sleep on open front pavilions.

While designed primarily for tuberculosis patients of Danville and Schoolfield, the institution is in position to care for a limited number of outside patients at moderate rates.

Officers in National Associations.

In the large number of national associations holding their annual meetings, in Washington, D. C., early in May, we note the following elections for the coming year.

The American Dermatological Association elected Dr. Howard Morrow, San Francisco, president, and Dr. U. J. Wile, Ann Arbor, Mich., secretary-treasurer.

The American Gynecological Society elected Dr. John A. Sampson, Albany, N. Y., president, and Dr. Arthur H. Curtis, Chicago, secretary.

The Association of American Physicians elected Dr. James B. Herrick, Chicago, president, and Dr. Thos. McCrae, Philadelphia, secretary.

The American Pediatric Society elected Dr. L. Emmett Holt, New York, president, and Dr. Howard Childs Carpenter, Philadelphia, secretary.

The National Tuberculosis Association elected Dr. Lawrason Brown, Saranac Lake, N. Y., president, and Dr. George M. Kober, Washington, D. C., secretary.

The American Laryngological Association elected Dr. Emil Mayer, New York City, president, and Dr. George M. Coates, Philadelphia, secretary.

The American Society of Tropical Medicine elected Dr. George Dock, St. Louis, president and Dr. Brayton H. Ransom, Washington, D. C., secretary-treasurer.

The American Ophthalmological Society elected Dr. William H. Wilmer, Washington, D. C., president, and Dr. Thomas B. Holloway, Philadelphia, secretary-treasurer.

The American Association of Genito-Urinary Surgeons elected Dr. William E. Lower, Cleveland, and Dr. Henry G. Bugbee, New York City, secretary-treasurer.

Dr. Kemp P. B. Bonner,

Morehead City, N. C., has been appointed director of the bureau of maternity and infant hygiene in the State Board of Health.

The West Virginia State Medical Association,

At its annual meeting last month, elected Dr. John N. Simpson, of Morgantown, president; Drs. R. J. Wilkinson, Huntington; Henry H. Hall, Wheeling; and Walter E. Vest, Huntington, vice-presidents; and re-elected Dr. Robt. A. Ashworth, of Moundsville, secretary-treasurer. The meeting will be held next year at Beckley.

The Citizens Military Training Camps,

In the Third Corps Area, will open July 27th and continue through August 26th, 1922. During this time, young men who choose to attend will be given free military training for

a period of 30 days, without any expense whatsoever. We give herewith a list of the camps in this district and the branch of the service in which training will be given at each place:—

Infantry, Cavalry, and Medical Corps, Camp Meade, Md.

Coast Artillery Corps, Ft. Monroe, Va.

Air Service, Langley Field, Va.

Engineer Corps, Camp Humphreys, Va.

Motor Transportation, Camp Holabird, Md.

Full information may be obtained by addressing U. S. Army Recruiting Station, 1016 East Main Street, Richmond, Va.

Dr. R. H. Woolling,

Pulaski, Va., was with a party of Rotarians who left the latter part of May, to attend the international meeting of Rotary Clubs, in Los Angeles. Mrs. Wooling accompanied him.

Norfolk Chapter, M. C. V. Alumni.

Alumni of the Medical College of Virginia, residing in Norfolk, Berkley, Portsmouth, Suffolk, and surrounding territory, recently convened in Norfolk and decided to hold meetings semi-annually, in May and November. Dr. E. C. S. Taliaferro, Norfolk, was elected president; Dr. Jos. D. Collins (medical), Portsmouth, Dr. D. A. Dudley (dental), and Marcellus Miller (pharmacal) vice-presidents; and Dr. W. M. Chandler, secretary. A feature of the meeting was an address by Dr. W. L. Harris, Norfolk, who is a member of the Board of Visitors of the Medical College of Virginia. After the meeting, supper was enjoyed by those present.

King's Mountain Memorial Hospital.

Work has been started on this new hospital in Bristol, Va., and it is expected that the building will be completed about the middle of next December. It will have sixty beds and three complete operating rooms. It is to cost about $150,000.

Dr. R. Lloyd Williams

Norfolk, Va., has been appointed chairman of the entertainment committee and will have charge of exhibits, for the fifty-third annual meeting of the Medical Society of Virginia, which is to meet in that city in the fall.

Dr. William B. Porter,

Who has been connected with the Medical Department of Stuart Circle Hospital, Richmond, has moved to Roanoke, Va., and assumed charge of the Medical Department of Lewis-Gale Hospital.

Dr. Porter graduated from the former University College of Medicine, this city, in 1911 and, after an internship at Hygeia Hospital, Richmond, located in this city. He served during the World War in Base Hospital No. 45 (McGuire Unit), with the rank of major.

Dr. R. D. Glasser,

Norfolk, Va., following the A. M. A. meeting in St. Louis, went to Rochester, Minn., to attend for several weeks, the Mayo Clinics in the section on Operative Gynecology.

Dr. B. C. Keister,

Formerly of Roanoke, Va., but more recently of Americus, Ga., took a post-graduate course on Internal Medicine and Pediatrics at Washington University, St. Louis. After the A. M. A. meeting, he went to El Paso, Texas, where he expected to spend some time.

Dr. and Mrs. Alexander G. Brown, Jr.,

Of this city, have returned from Washington, D. C., where they went to attend the graduation exercises of their daughter, Miss Margaret Upshur Brown, at the National Cathedral School.

Dr. M. C. Sycle,

Richmond, attended the meeting of the Board of Visitors of the Virginia School for Deaf, Dumb and Blind, in Staunton, this month.

U. Va. Hospital to Have New Wing.

A wing for orthopedic work is to be added to the University of Virginia Hospital, the cost to be $60,000.

The International Congress of Ophthalmology,

Which met in Washington, D. C., recently, elected Dr. Geo. E. de Schweinitz and Dr. Luther C. Peter, both of Philadelphia, president and secretary, respectively.

The American Proctologic Society,

At its meeting in St. Louis, elected Dr. E. H. Terrell, of Richmond, Va., president for the coming year, and re-elected Dr. Ralph W. Jackson, of Fall River, Mass., secretary-treasurer.

Park View Hospital,

Rocky Mount, N. C., owned by Drs. E. S. Boice and B. C. Willis, formerly of Richmond, has recently completed an annex of fifteen

rooms, installed a refrigerating plant, etc., at an expense of over $20,000.

Dr. E. L. Flanagan,

Richmond, Va., who for the past two years has been engaged in X-ray work in this city, has gone to New York City, where he will spend several months studying Roentgen ray diagnosis and treatment at the various hospitals and clinics.

Dr. and Mrs. Harry D. Howe,

Hampton, Va., left the latter part of May for Dobb's Ferry, N. Y., to attend the graduation of their daughter, who has been at school there.

The American Laryngological, Rhinological & Otological Society,

At its recent meeting elected Dr. Dunbar Roy, of Atlanta, Ga., president, and re-elected Dr. Wm. H. Haskin, of New York City, secretary.

Dr. P. G. Hundley,

Who has been practising for sometime at Shenandoah, Va., is now located at 1358 Rivermont Avenue, Lynchburg, Va.

Dr. W. A. Lucas,

Who since the World War has been in the U. S. Public Health Service, being last stationed at Prescott, Arizona, has resumed his practice in Pulaski, Virginia.

Dr. Barton B. McCluer,

Who was temporarily at his old home, Bon Air, Va., after returning from West Virginia, is now located at Speedwell, Va.

Dr. Frank G. Simmons,

Who has for some time been associate physician in charge at Mt. Regis Sanatorium, Salem, Va., has returned to his former home in Richmond, Va.

Dr. Edward Bancroft is the new associate physician at this Sanatorium.

Dr. W. A. Shepherd,

Of this city, who was seriously ill from an attack of erysipelas, has resumed his practice and laboratory work.

Dr. S. R. Jordan

Has moved from Virgilina, Va., to Townsville, N. C.

Dr. Carrie Chase Davis,

Recently of Hopewell, Va., has accepted a position at the Southeastern State Hospital, at North Madison, Ind.

A Correction.

In giving names of officers of Sussex County Medical Society, in our May issue, Dr. W. D. Prince, Stony Creek, should have been listed as vice-president, rather than Dr. J. F. Slade of the same place.

Another State Journal.

The Louisiana State Medical Association announces that it has purchased the *New Orleans Medical and Surgical Journal*, to be used as its official organ.

We understand that the Mississippi State Medical Association also voted to accept this journal as its official publication.

St. Elizabeth's Hospital Issues Annual Report.

St. Elizabeth's Hospital, Richmond, has issued its annual report for 1921, giving statistics as to patients admitted, and report of diagnosis, operations, etc. So far as we know, this is the first of the local private hospitals to issue such a report, and it will be of interest to the profession to know exactly the results that have been obtained from various operations.

This hospital was opened in February 1912, as a private hospital for the care and treatment of Dr. J. Shelton Horsley's surgical patients. From time to time, the increasing demand for hospital service has necessitated enlargement. At present, the hospital can care for sixty patients. The present report covers the work at St. Elizabeth's during the first year of its administration under the "Group System," which was inaugurated there in September 1920.

Dr. Mary E. Brydon,

Of the State Board of Health, has been appointed by Governor Trinkle one of the commissioners at large to investigate as to the feasibility of establishing separate schools for the deaf and blind. The report will be submitted to the next General Assembly.

Dr. Junius F. Lynch,

Of Norfolk, Va., state commander of the American Legion, gave an address before the North Richmond Post, on May 16.

Dr. and Mrs. P. E. Tucker

Have returned to their home at Buckingham C. H., Va., after attending the Baptist Convention in Jacksonville, Fla.

Dr. Loren E. Cockrell,

Of Reedville, Va., has been elected a member of the board of directors, of the newly organized Northumberland Chamber of Commerce.

Dr. William C. Powell,

Petersburg, Va., has been appointed brigade surgeon of the Second Brigade, Sons of Confederate Veterans.

Dr. Clifton M. Miller,

Of Richmond, Va., was elected a member of the American Otological Society, at its last meeting.

Venereal Diseases Treated at Dispensary of M. C. Va.

In reports which have been submitted regularly by the Dispensary of the Medical College of Virginia, venereal diseases have been shown to be 16% of the total diseases treated there. In April, although the percentage was decreased to 13.4, venereal diseases led all of the diseases and conditions treated.

The Va. T. B. Association,

Which has recently won such Statewide attention because of its free diagnostic clinics, is now launching a new line of endeavor in the form of a Permanent Organization in each county which shall care for the local tuberculosis problem. This Association has left a total of over $33,000.00 in the care of local treasuries from the proceeds of the 1921 Christmas Seal Sale. Every effort is now being expended to coordinate local forces throughout the State in the wisest and most careful expenditure of this money.

All Ex-Service Men in Virginia

Who received decorations, citations or other official recognition for bravery or conspicuous service in the World War, and who have not sent copies of citations and official letters of recommendation to the Virginia War History Commission, Room 9, State Capitol, Richmond, Va., are urged to do so without delay.

The Commission is about to publish the official citation of every Virginian who has furnished the proper credentials. It is very important that this Distinguished Service List be made complete and if YOUR name should be on the Honor Roll, see that it gets there by posting a certified copy of your citation to the above address NOW.

The U. S. Civil Service Commission

Announces open competitive examinations for toxicologist, associate toxicologist, and assistant toxicologist, receipt of applications to close July 3, 1922;

Laboratorian and assistant laboratorian (roentgenology), applications to be rated as received until further notice.

There is also an urgent need at hospitals of the U. S. Public Health Servcie and establishments of the U. S. Veterans' Bureau for reconstruction aides in physiotherapy and occupational therapy, and also for dietitians, in connection with the rehabilitation of disabled soldiers, sailors and marines. The Commission will receive applications for these positions until further notice, applicants to be rated on subjects of education, training, experience, and physical ability, rather than by written examination.

Full information and application blanks for any of the above may be secured from the U. S. Civil Service Commission, Washington, D. C.

Dr. Paul V. Anderson,

Of Westbrook Sanatorium, Richmond, attended the twenty-fifth reunion of his class at Trinity College, North Carolina.

Dr. Olin West,

Nashville, for the past eight years secretary of the Tennessee State Medical Association, has resigned to become Field Secretary of the American Medical Association.

Alumni to Confer With Board of Visitors, M. C. Va.

Dr. Maufred Call, Richmond, newly elected president of the Alumni Association, Medical College of Virginia, appointed a committee of seven to confer with the Board of Visitors

and others in the discussion relative to the future expansion of their alma mater. The personnel of the committee is: Dr. H. U. Stephenson, Toano; Dr. Elisha Barksdale, Lynchburg; Dr. P. St. L. Moncure, Norfolk; Dr. Murat Willis and Dr. Alex. G. Brown, Jr., of Richmond; Dr. Harry Bear, Richmond, representing the dental alumni; and T. M. Toone, Richmond, representing the pharmaceutical alumni.

Appointed on Nurses' Board.

Miss R. N. Smith, a registered nurse of Norfolk, whose home is at Craigsville, Va., has been appointed by Governor Trinkle as a member of the Virginia State Board of Examining Nurses.

Location Wanted.

Protestant graduate of Medical College of Virginia in 1907, aged 40, who has been doing industrial work since graduation, wants a location in Virginia, in some good small town Must be in a good community, with good schools and good roads. Will not object to doing some rural work on good roads and among a good class of people. Available about September 1st. Address No. 154, care this journal. (Adv.)

Wanted.

A few book agents to sell the new "Crowning Edition" of the celebrated "Book on the Physician Himself." Rare chance. Address the author, D. W. Cathell, M. D., Emerson Hotel, Baltimore, Maryland. (Adv.)

Wanted

A good location in Virginia. Address "S. G.", care Virginia Medical Monthly. (Adv.)

Wanted.

Physicians (Mental Diseases) $1,800 to $2,000 a year and Institutional Maintenance. Apply "State Employment Commission, 22 Light Street, Baltimore, Maryland." (Adv.)

Assistant Wanted.

Wanted physician with experience in general practice to do office work, x-ray and laboratory work in small town. Will arrange all training needed. Moderate salary, which will begin at start. Prefer a man who cannot get about or who does not like general practice. Send recommendations with first letter. Address "K. B.", care this journal. (Adv.)

Obituary

Dr. Hugh McGuire Taylor,

One of the best known physicians and surgeons of Richmond, an ex-president of the Medical Society of Virginia, and also of the Richmond Academy of Medicine and Surgery, died May 30, at his home in the suburbs of this city, after being in ill health for sometime. He was born in Clarke County, Va., 66 years ago and, after completing his academic education, studied medicine at the Medical College of Virginia, from which he graduated in 1876. He joined the Medical Society of Virginia two years later. Shortly after graduation, he was made demonstrator of anatomy in the Medical College of Virginia and continued on the teaching staff of that college until the organization of the University College of Medicine in Richmond, when he became professor in that school. At the time of his death he was emeritus professor of clinical surgery in the Medical College of Virginia. When the Medical Examining Board of Virginia was organized, he was appointed a member and, during his connection with the board served both as its secretary and president. Dr. Taylor was identified with a large number of medical associations, in which he took a prominent part and was several times honored by being made an officer in many of these. He was also a member of the vestry of All Saints' Episcopal Church, this city.

Dr. Taylor is survived by his widow, who was Miss Minnie E. Whitcombe, and a large family connection.

Dr. John Herbert Claiborne,

Son of the late Dr. and Mrs. John Herbert Claiborne, of Petersburg, Va., died at his home in New York City, May 27. He was born in Louisburg, N. C., about sixty years ago but spent his boyhood in Petersburg. He graduated in medicine from the University of Virginia in 1883. In 1887, he joined the Medical Society of Virginia and had been a member of this Society continuously since. While still quite young, Dr. Claiborne located in New York City, where he soon became prominently known as an eye specialist. He was president of the Southern Society of New York City as well as an active member of a number of patriotic and medical societies. He is survived by his wife, a son, and two sisters. The interment was made in Petersburg.

Dr. Joseph Nathaniel McCormack,

One of the most prominent medical men o. this country, died at his home in Louisville, Ky., May 4, at the age of 75 years. His death was due to cerebral hemorrhage. He graduated from Miami Medical College, Cincinnati, in 1870, and in 1873 was given the degree of M. D. by the University of Louisville. He made his home in Bowling Green, Ky., until 1910, at which time he moved to Louisville. He was an active and interested worker in medical and health matters of Kentucky and the whole country, and had filled many important positions in the American Medical Association, as well as in his local societies. He was an ex-president of the Kentucky State Medical Association and for many years a member of and secretary of the Kentucky State Board of Health. Dr. McCormack had been a non-resident, honorary member of the Medical Society of Virginia since 1903, and seemed always interested in the meetings, even when he could not attend.

Dr. Samuel L. Jepson,

Of Wheeling, W. Va., dean of the Medical profession of West Virginia, died May 2, at the age of 80. He was a native of St. Clairville, O., and a graduate in medicine from the Medical College of Ohio, Cincinnati, in 1868. Dr. Jepson was one of the most beloved physicians of West Virginia, and had many times been honored by the profession of his State. He was an ex-secretary and ex-president of the West Virginia State Medical Association, editor of the State journal for ten years, and State Health Commissioner from 1913 to 1921. He was faithful to all his duties and perhaps did more than any one man for the future of medicine in West Virginia.

Resolutions on Death of Dr. A. C. Fisher.

At a meeting of the NORTHERN NECK MEDICAL SOCIETY held at Warsaw, Va., on May 25, 1922, the following resolutions and preamble were adopted:

WHEREAS the Northern Neck Medical Society has heard with deep sorrow and profound regret of the death, since our last meeting, of Dr. A. C. Fisher, who was a charter member and ex-President of this Society.

THEREFORE BE IT RESOLVED, 1st: That the Society has lost in his death a wise counseler, the members a true friend, and his large clientele a skilled physician, self-sacrificing in his desire to minister to the relief of human suffering.

RESOLVED, 2nd: That a copy of trese resolutions be spread upon our minutes, published in the NORTHERN NECK NEWS, THE VIRGINIA MEDICA MONTHLY, and a copy be sent to the bereaved family to whom we tender our deepest sympathy.

Signed,

B. A. MIDDLETON,
C. T. PIERCE,
G. B. HARRISON.

Dr. John Allan Wyeth,

Widely known as author and teacher, died suddenly from heart disease, at his home in New York City, May 28. He was born in Guntersville, Ala., and had just celebrated his 77th anniversary. He served as a private in the Confederate army and in 1867 took up the study of medicine at the University of Louisville, from which he graduated two years later. He was the founder of the New York Polyclinic Medical School and Hospital, one of the first post-graduate medical schools in the United States, and was also the author of a number of essays and textbooks on anatomy and surgery.

Dr. Joseph Eugene Good,

New Market, Va., died May 7, from meningitis. He was 60 years of age and a graduate in medicine from Jefferson Medical College, Philadelphia, in the class of 1884. Dr. Good was for some years a member of the Medical Society of Virginia, having resigned only recently.

Dr. Robert Gamble Cabell,

Of Richmond, Va., died May 7, after a short illness, aged 75 years. He was a native of Richmond. As a cadet at the Virginia Military Institute, he entered the Confederate service during the war between the states. He gradated from the Medical College of Virginia in 1870. After practising for a number of years and later being in the drug business, he was appointed superintendent at the City Home of Richmond. He had held this position for nearly fifteen years. He is survived by three sons and a large family connection.

Dr. Franklin P. Gates,

Of Manteo, N. C., was found dead in a hotel in Norfolk, Va., May 23. He was dressed and sitting in a chair and it is presumed his death was due to heart trouble. He was 63 years of age and a graduate from Bellevue Hospital Medical College, New York, in 1886. Dr. Gates was a member of the Medical Society of the State of North Carolina and prominent throughout the eastern section of North Carolina.

Fifty-third Annual Session, Norfolk, Va., Oct.31-Nov.3, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 4.
WHOLE NO. 841

RICHMOND, VA., JULY, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

PRIMARY CARCINOMA OF THE GALL BLADDER.*

By STEPHEN H. WAITS, M. D., F. A. C. S., University, Va.
Professor of Surgery, University of Virginia.

Primary carcinoma of the gall-bladder is by no means an uncommon disease. From September 1, 1907, to October 15, 1921, 525 operations have been performed at the University of Virginia Hospital for various affections of the gall-bladder and biliary passages and in that number twenty cases of primary cancer of the gall-bladder were encountered, a percentage of 3.8.

The disease is much more common in women than in men, as is also true of gall stones, the ratio usually being given as four or five to one, but in our series of twenty cases there were eighteen women and two men, a ratio of nine to one. It is especially prevalent in advanced life, the average age in the 268 cases collected by Fütterer being fifty-eight years, while in our own series the average was fifty-seven years. One of our cases was a young woman of only thirty-five years and the disease progressed rapidly to a fatal termination.

The association of gall stones with primary carcinoma of the gall-bladder is very striking. In our twenty cases diagnosed primary carcinoma at operation, stones were demonstrated in ten cases or fifty per cent., but it should be remembered that in many of these cases the gall-bladder was so involved in growth that stones could not be demonstrated, even though present. Careful investigations of others seem to show that gall stones are associated with primary cancer of the gall-bladder in seventy to ninety-five per cent. of cases.

As regards the etiology of primary carcinoma of the gall-bladder I believe most observers think the chronic irritation produced by the gall stones is the chief factor. Others have considered the gall stones to be secondary to the cancer but this is probably disproved by the fact that gall stones are rarely found with secondary carcinoma of the gall-bladder. Still others, who adhere to the infectious origin of cancer, maintain that the pathological conditions of the epithelium lining the gall-bladder increase its vulnerability to the microparasite of cancer.

The observation of MacCarty on the early changes in the walls of chronically inflamed gall-bladders with and without stones are of great interest. In 1915 he reported eighty-five cases of papilloma of the gall-bladder out of 2,168 gall-bladders which had been examined and made the following comments:

"In all cases the mucosa was intact. The papillomata vary from twice to five or six times the length of normal villi. They are usually pedunculated, frequently racemose, and usually white or yellow. They appear in any portion of the organ, being confined neither to the neck nor the fundus."

"Upon microscopic section they appear to be hypertrophic villi, the tissue elements of which present an hyperplastic condition. The connective tissue and glandular tissues are greatly increased, the latter being so distorted that sections cut the glands in many different planes. The epithelium of the glands is hypertrophic and occasionally hyperplastic, and practically always completely covers the growth. In the stroma one finds large round or oval cells which contain fat or some fatty substance, this condition probably being responsible for the yellowish gross appearance of the growths. In no case were there any signs of early carcinoma, although similar hypertrophic conditions of the villi have been

*Read by title before the Medical Society of Virginia, at Lynchburg, October, 1921.

seen in association with carcinomatous outgrowths of the gall-bladder."

"It is quite possible, in the light of recently discovered facts relative to the stages of epithelial hyperplasia from chronic irritation, that these fibro-epithelial proliferations might also present the stages which are apparently a part of a cytological reaction, which ends in a malignant condition."

commonly called dyspepsia but which careful inquiry would show to be really chronic cholecystitis while in other cases there is a more or less definite history of antecedent gall stones. The insidious and comparatively painless nature of the disease is illustrated by several of our advanced cases.

When the disease is so advanced that a hard irregular mass in the gall-bladder region, per-

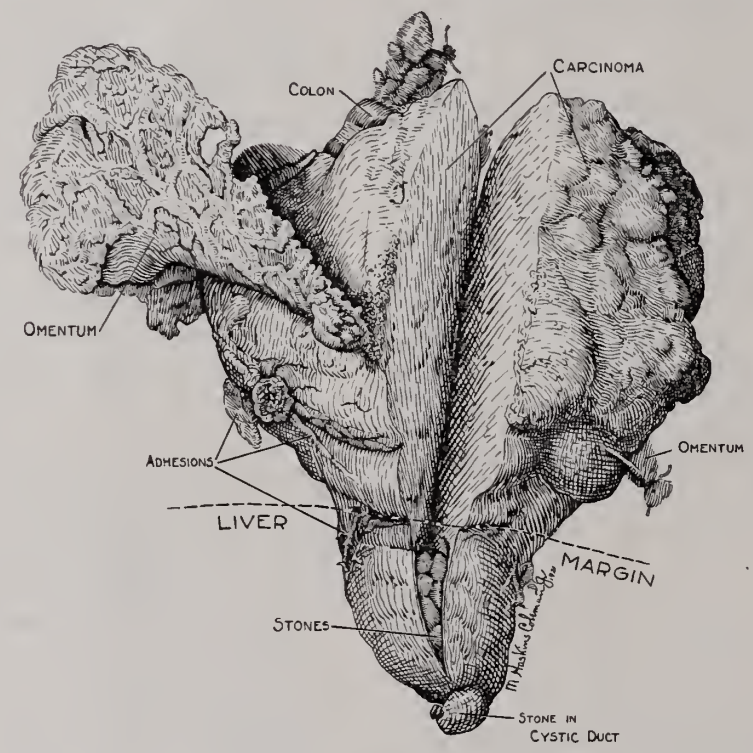


Fig. 1. Case 1. Carcinoma of Gall-Bladder, Superior View (full size.)

haps associated with an enlarged liver and jaundice, makes the diagnosis very probable, surgery has little to offer, though it has been our custom to give these patients the benefit of the doubt and to explore. We must, however, bear in mind that operation in such cases may injure the cause of gall-bladder surgery and the surgery of cancer in general.

Cancer arises in any part of the mucous membrane of the gall-bladder and may project into its cavity as an exuberant fungating growth or infiltrate its walls and spread directly into the liver. Some pathologists try to distinguish between carcinoma arising in the surface epithelium of the gall-bladder and that from the mucous glands. Microscopically, the disease may present the picture of adenocarcinoma, solid-celled carcinoma, or, in rare instances, of squamous-celled carcinoma with cell nests.

Like malignant disease of other abdominal viscera, early carcinoma of the gall-bladder is practically painless and symptomless: therefore early clinical diagnosis is rarely possible. Some patients complain for years of what is

I believe there have been very few permanent cures of carcinoma of the gall-bladder in which the true nature of the disease could be recognized macroscopically at operation. The cases which have been cured are usually those in which carcinoma has been discovered in the routine laboratory examination of extirpated gall-bladders. Our chief hope for the future, therefore, lies in the early diagnosis of gall-

bladder lesions and the removal of diseased gall-bladders.

One of my cases illustrates this point very well. This patient was operated upon in June, 1909, for gall stones. A thickened rather acutely inflamed gall-bladder was found and the gall-bladder was merely drained after removing the stones. She returned to the hospital in April, 1910, with carcinoma involving the abdominal scar and the fundus of the gall-bladder. The gall-bladder and growth in the abdominal wall were removed but the patient ultimately succumbed. At the present time, such a gall-bladder, even though acutely inflamed, would probably be removed at the primary operation.

Past History.—Has had measles, mumps and whooping cough but no other acute infectious diseases. Gastro-intestinal history negative before onset of present illness.

Present Illness.—Began one year ago with sudden cramp-like pain in the gall-bladder region and right back, nausea and vomiting. Attack lasted about thirty-six hours. Since then there has been a tired feeling in the back and tenderness below the right costal margin. Appetite fairly good for past year but worse in last four months. At present, no actual pain, but "indigestion" and tenderness. Has lost about twenty pounds. No jaundice.

Examination.—Patient is a rather stout woman. General condition fairly good. Temperature normal. No jaundice. In the gall-bladder region a mass the size of a small grapefruit can be felt. It is generally rounded but somewhat irregular in shape, descends on inspiration. Liver not enlarged. Patient was thought to have hydrops of gall-bladder, possibly malignant owing to irregularity noted above.

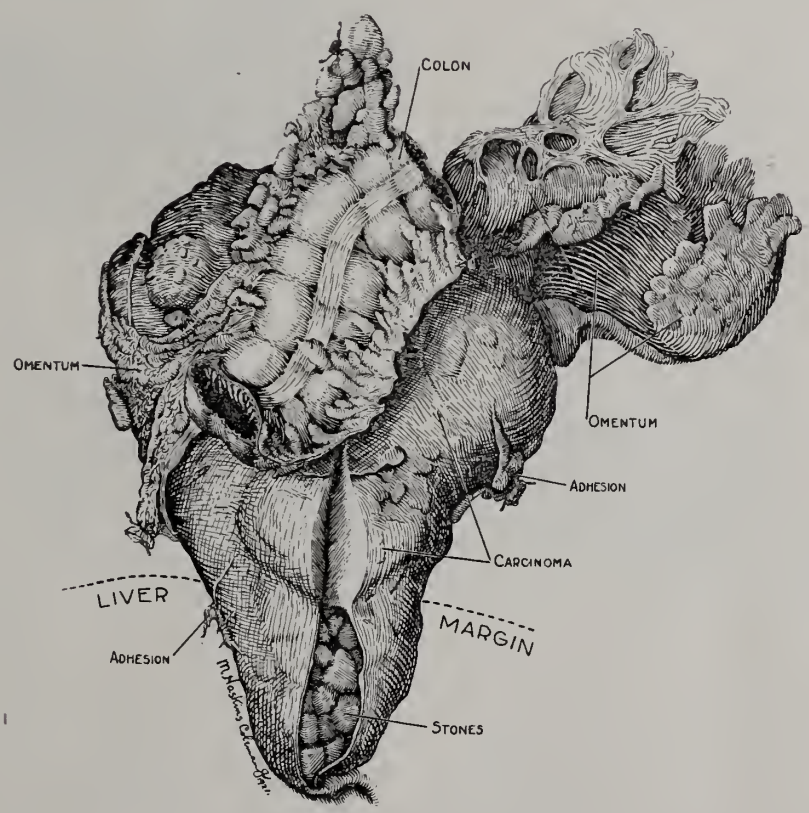


Fig. 2. Case 1. Carcinoma of Gall-Bladder, Inferior View (full size.)

Below are reported in some detail the cases from which the accompanying drawings were made.

Case I.—Mrs. R. A., white, aged fifty years, was admitted to the hospital May 14, 1920, complaining of pain in the back and right side.

Family History.—Unimportant except that she has had eleven children.

Operation.—(May 17, 1920.) Mass proved

to be a very large carcinoma of the fundus of the gall-bladder, over which the omentum was adherent and to the lower side of which the transverse colon was firmly attached. Careful examination showed no involvement of the liver and no enlarged glands could be felt. Since that portion of the gall-bladder adjacent to the liver seemed uninvolved, it was decided to do a radical operation, removing gall-bladder, adherent omentum and section of transverse colon. Examination of the specimen (Figs. 1 and 2), showed a very large carcinoma of the gall-bladder and numerous gall stones.

Post-operative Course.—The wound healed slowly and patient left hospital on July 7th, apparently in good condition; however, she died three months later with a massive local recurrence.

Case II.—Mrs. A. H., white, aged thirty-five years, was admitted to the hospital November 26, 1920, complaining of gall stones.

Family History.—Unimportant.

Past History.—Has had measles, whooping cough, chicken-pox and pneumonia. No typhoid. Appetite is generally poor and she suffers with chronic constipation but has had no particular indigestion. She has four children.

Present Illness.—About three months ago she noticed a slight tenderness and uncomfortable feeling in the right side below the costal margin and also in the right lower quadrant. There were no other symptoms. She came to the hospital and physical examination was negative with the exception of slight tenderness in gall-bladder region. Gall-bladder trouble was suspected but operation was not urged and patient went home. The discomfort continued and soon she began to have rather marked pain which radiated to the back but not to the right shoulder. Pain finally became so bad that she returned to the hospital. For past two months has spent most of her time in bed. Never vomited until a few days ago. Has never been jaundiced.

Examination.—Patient is a well nourished woman; is suffering acutely. She is rather anemic but not jaundiced. Temperature 103; leucocytes 18,400. There is marked tenderness and some rigidity in the gall-bladder region and a tender rather hard mass the size of an egg can be felt here. It was thought that the patient had an empyema of the gall-bladder.

Operation.—(November 26, 1920.) The mass mentioned above proved to be the gall-bladder which was very hard and suggested carcinoma. The edge of the liver where the gall-bladder was attached seemed to be in-

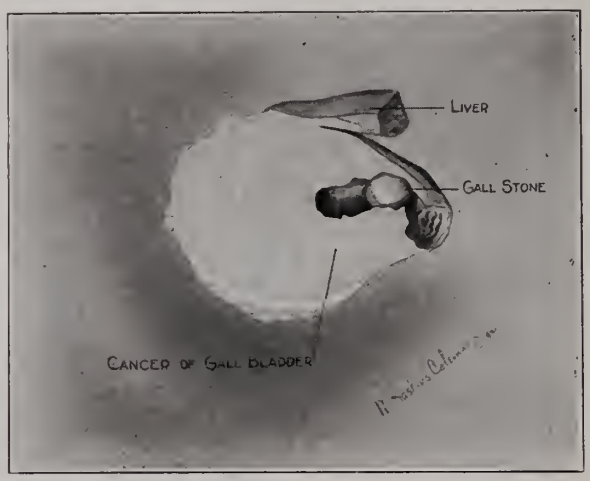


Fig. 3.—Case II.

volved in the growth. The surrounding omentum was tightly adherent to the mass as were the transverse colon and duodenum. These adhesions were separated with some difficulty. It was then found that about one-half of the gall-bladder was involved in the growth, namely the fundal portion, whereas the rest of the gall bladder was distended with fluid. Further search showed a hard gland 2 cm. in diameter at the junction of the cystic and common ducts, apparently occluding the cystic duct. Other small hard glands were felt along the common duct. That portion of the gall-bladder involved in the growth (Fig. 3) along with the edge of the liver was excised. The gall-bladder, which contained purulent fluid and one gall stone, was drained.

Post-operative Course.—Patient suffered greatly with pain in her back after operation. She was given one application of radium in gall-bladder. Was discharged from hospital on December 20, 1920, and died February 7, 1921.

Case III.—Mrs. M. M., white, aged sixty-six years, was admitted to the hospital December

4, 1920, complaining of pain and a lump in abdomen.

Family History.—Patient has had whooping cough, typhoid and malarial fever. She has often had gas on the stomach and suffered with colicky pains after indiscretions in diet. She has had 7 children.

Present Illness.—Two years ago she had an attack of severe pain in the right hypochondrium radiating to the back and accompanied by nausea and vomiting. At about the same time she noticed a small mass in the gall-bladder region. She has had frequent attacks of this character during the past two years, gradually increasing in severity and frequency. The mass has increased in size, more rapidly in the last six weeks. She has lost much weight.

Examination.—Patient is poorly nourished but pulse is good. Temperature normal. No jaundice. On abdominal examination a rounded, fairly smooth mass, the size of an orange, can be felt in the gall-bladder region below the edge of the enlarged, somewhat irregular liver, which extends 10 cm. below the costal margin in the nipple line.

The condition was considered most likely to be carcinoma of the liver and gall bladder but, in view of the fact that the patient was not jaundiced and did not go to pieces more rapidly, exploration was considered justifiable. This was refused and the patient went home. She returned January 4, 1921, requesting operation. There was still no jaundice, in fact very little change in her condition except that the mass was slightly larger.

Operation.—(January 19, 1921.) The liver was found to be very large, hard, and nodular, evidently due to carcinoma. The gall-bladder was greatly distended and its wall thickened. Wound closed.

Autopsy.—Patient died about 10 days after exploration. Autopsy revealed extensive carcinoma of gall-bladder with gall stones, and widespread invasion of liver (Fig. 4).

Case IV.—Mr. S. P., white, aged sixty-three years, was admitted to the hospital January 19, 1921, complaining of uneasiness in the stomach.

Fig. 4. Case III.

Family History.—One sister was explored in this hospital for primary carcinoma of the gall-bladder.

Past History.—Usual diseases of childhood. Pneumonia 20 years ago. No typhoid. Nine years ago had an attack of very acute pain in the right hypochondrium which caused him to faint. He was very sore below costal margin for several days. Has had no similar attack since then.

Present Illness.—Began about four weeks ago with uncomfortable feeling in stomach. There has been no sharp pain, no vomiting,

but some soreness in gall-bladder region on deep pressure.

Examination.—General condition is good but patient has evidently lost some weight. Temperature normal. No jaundice. Abdominal examination negative except for slight tenderness in gall-bladder region. A diagnosis of gall-bladder trouble was made and operation advised but patient decided to go home for a while before having operation performed.

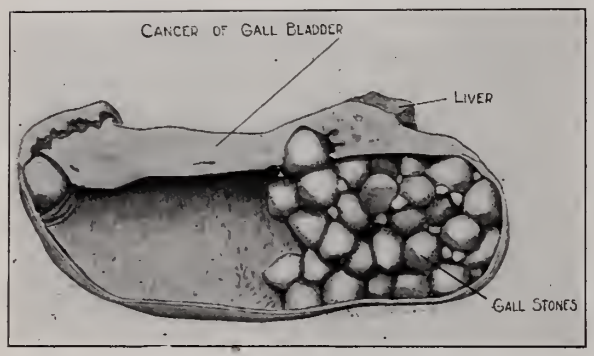


Fig. 5. Case IV.

He returned to the hospital on February 27, 1921. Since leaving the hospital his appetite has been poor and he has lost considerable weight. He has not been confined to bed but has spent considerable time in bed. Has had no actual pain but a full sensation in gall-bladder region. Has had no nausea nor vomiting. No chills nor fever. Three days ago he became deeply jaundiced. Temperature is normal. A definite, tender mass can now be felt in the region of the gall-bladder which descends on inspiration and the liver edge can also be felt 2 cm. below the costal margin. No nodules felt in liver. Carcinoma was strongly suspected.

Operation.—(Feb. 28, 1921). Liver was enlarged, probably due to engorgement with bile, but no nodules were seen or felt in it. The gall-bladder was distended and its lower portion near the cystic duct felt thick and firm, suggesting carcinoma. The gall-bladder was aspirated and a considerable amount of purulent bile removed. Cultures were taken and later proved to be sterile. Numerous stones were found. The presence of pus and stones, and the numerous adhesions about the gall-bladder made us hope that the condition might be inflammatory; therefore adhesions were separated and gall-bladder removed with some difficulty. After removal it was found that the lining of the gall-bladder was every where fairly smooth, apparently denuded of its mucosa but there was no definite suggestion of carcinoma in the lining. The chief thickening of the gall-bladder was on the side of the liver attachment and measured nearly 1 cm. in thickness (Fig. 5). On cutting into this area the tissue was very suggestive of carcinoma and frozen sections proved it to be such. The tissues about the common duct were very hard and friable, doubtless cancerous and occluding the duct.

Post-operative Course.—Bile discharged freely after drains were removed and patient grew weaker. He was taken home on March 16, 1921, and died two weeks later of virulent facial erysipelas.

SURGICAL TREATMENT OF FACIAL PARALYSIS.*

By C. C. COLEMAN, M. D., F. A. C. S., Richmond, Va.
Department Neuro-Surgery, Hospital Division, Medical College of Virginia.

Surgery of the cranial nerves is limited almost entirely to destructive operations upon the trigeminal, for severe neuralgia, and to suture or fusion of a permanently interrupted facial nerve for the relief of a conspicuous deformity caused by paralysis of the muscles of expression of one-half of the face.

Whatever the functional disability which may result from severe injury of the facial nerve, the chief concern of the patient is the serious alteration in his facial appearance and expression. The deformity, while always considerable, varies in different people, and, as a rule, is more pronounced in the old than in the young. The response of the muscles of the unaffected side to any emotional stimulus gives prominence to the deformity, so that rigid repression of all facial movement is likely to become a fixed habit.

The most common types of facial paralysis result from disease or injury of that segment of the facial trunk which is enclosed in bone. The cases due to infection or compression of the nerve, and known as Bell's

*Read before the Southern Surgical Association, December 16, 1921, Pinehurst, N. C.

palsy, usually recover more or less completely, within a few weeks or months, and require surgical treatment only when regeneration of the nerve is unduly delayed, or manifestly impossible. Disease or injury of the facial tract above the nucleus of the nerve may produce paralysis of the lower face, but this form of paralysis is not important as an independent surgical lesion. The nerve may be injured in its course through the parotid

Case No. 1.—Complete paralysis of right facial nerve, involving all branches except the depressors of the angle of the mouth, the platysma, stylohoid and digastric. The paralysis was caused by division of the branches in the parotid gland, by a fragment of glass. Operation five weeks later. Direct suture of divided branches. Trunk of nerve first exposed, and identified by application of faradic electrode, proximal to entrance into the parotid, and traced forward through dense scar tissue, to the site of the injury, which was about one-fourth inch distal to the pes. Four small branches had been completely divided by the fragment of glass. The identification of the peripheral segments of these divided branches required a long, tedious dissection, because of the scar tissue and the minute size of these branches. The branches were sutured with fine silk. The identification of the peripheral segments of two of the branches was doubtful.

(A) The absence of levator action of the right side of the mouth is apparent. There is only slight deviation of the mouth due to the preservation of function of the lower branch of the facial, which was not divided.

(B) Inability to close the eye of the paralyzed side.

(C) Loss of movement in the occipitofrontalis of the right side.

Lower series of photographs, seven and a half months after suture of the branches of the nerve.

(AA) Note the restoration of levator action with return of the nasolabial fold of the right side. There is no asymmetry of the face. The palpebral fissures are of equal width.

(BB) Movement of right side of face. Note the active movement of the orbicularis palpebrarum. Movement of the occipitofrontalis is beginning, (not shown in photograph) and is well advanced in the right corrugator supercilii. The patient is beginning to dissociate movements of the muscle groups.

(CC) The patient closes the eye of the right side without mass movement.

The course of recovery after direct suture of the nerve is very similar to that of spontaneous recovery following severe Bell's palsy, in which mass movements may persist for some time.

gland, and one or more branches may be divided in, or distal to, this location. Such cases are usually unfavorable for operative procedure upon the nerve itself unless a direct suture is done promptly.

Injury of the nerve during mastoid operations is responsible for most of the cases of permanent paralysis in civil life. This does not appear to be a very frequent accident, but statistics on this phase of the subject are difficult to obtain. It is not of practical importance to speculate on the type of damage which the nerve sometimes receives as a result of operations upon the mastoid. A progressive infection of the nerve may be superimposed upon a direct injury in some of these cases, thus converting a partial lesion, with recoverable tendencies, into a permanent obstruction to regeneration. Perhaps, injury to the facial nerve might often be avoided in radical mastoid operations, by the application of a small faradic electrode to tissues of doubtful identification, which lie about the usual location of the nerve. Faradic identification of the motor root of the trigeminal is an accepted procedure in operations upon the central root of the gasserian ganglion, and the local conditions in operations upon the mastoid, or in parotid tumor removal, do not appear less favorable to the employment of this measure as a protection to the facial nerve. The prodding of motor nerves, or pinching with forceps, for the purpose of identification, is a crude and unreliable procedure.

The prognosis of severe facial paralysis, following either trauma or infection, must generally wait upon the intervention of a more or less indefinite period, during which time repeated clinical examinations should be made to determine the progress or absence of regeneration.

The indications for operation in a large majority of cases rest entirely upon a reasonable doubt of the probability of spontaneous recovery. Certain exceptions to delayed operations are obvious. Stab wounds followed by immediate paralysis should invariably be explored within twenty-four hours, and the nerve suitably treated, provided the patient's general condition admits of operation. If promptly explored, the distal segments of the nerve may be found by searching the tissues with a faradic electrode.

In some of the cases complicating mastoid operation, recovery may set in after two months, and progress to entire restoration of function. Severe Bell's palsy may be tardy in showing signs of regeneration, and it seems best to allow a very generous period of time for spontaneous regeneration. It is often impossible in these cases to approximate closely the level of the nerve involvement, and the length of time required for recovery will depend upon the distance the regenerating axis cylinders must travel to reach the paralyzed muscles. When the nerve is paralyzed by direct trauma, during a mastoid operation, the approximate level of the injury is known, and, if the lesion is a favorable one, signs of recovery should appear in two or three months, in accordance with the rate of unobstructed nerve regeneration. The superiority of spontaneous regeneration to the function obtained by fusion operations, and the impossibility of performing a direct suture in the large majority of facial nerve injuries, naturally foster a conservative attitude in dealing with cases of facial paralysis.

Case No. 2.—Complete right facial paraylsis following lesion of the nerve in the bony canal. Photograph three weeks after onset. Spontaneous improvement began in six weeks after onset, and complete recovery took place within six months. Prognosis of probable spontaneous recovery was based on condenser tests.

It is not a simple matter to obtain information by exploration in these cases, as may be done with peripheral nerve injuries, where the nerve may be exposed and appropriate operative measures employed. If, on the other hand, operation is unduly delayed, degenerative changes in the paralyzed muscles may greatly impair the functional end results. In

the cases upon which we have operated, recovery of muscle function has been less complete in the orbicularis oris than in the other muscle groups. It may be that the delicate fasciculi which comprise this muscle degenerate earlier and more extensively than some of the other muscles of expression. A similar situation probably exists in the degeneration of the intrinsic hand muscles, and imperfect recovery following ulnar nerve division, with delayed suture.

We have followed the suggestion of Ballance, and waited six months before doing a fusion operation for facial paralysis. This delay seems justifiable in the cases due to infection or compression (Bell's palsy), but we believe that the traumatic cases should be operated upon at the end of the third month, if there are no signs of regeneration upon careful clinical examination and electrical tests. The question is sometimes raised as to the advisability of fusion of the facial, in cases of paralysis of many years' duration, or when recovery has been incomplete, and there is deviation of the mouth or inability to close the eye. If complete degeneration of the mus-

Case No. 3.—Facio-hypoglossal fusion for permanent paralysis of the right facial, following lesion of the nerve in the bony canal.

The upper row of photographs shows various aspects of the deformity before fusion operation.

(A) Note the deformity with face in repose.

(B) Inabllity to close eye on the paralyzed side.

(C) Emigration of the mouth to the healthy side during effort to make bilateral exposure of the teeth. The immobility of the right side is clearly shown.

(E) Support of the paralyzed side by an adhesive strip (Frazier). Note the correction of the deviation of the lower face to the left, and the narrowing of the palpebral fissure of the paralyzed side by the upper pull of the adhesive.

Lower series of photographs, eight months after facio-hypoglossal fusion.

(AA) Face in repose. The deformity shown in (A) has disappeared. Note the equal width of the palpebral fissures on the two sides.

(BB) The patient closes both eyes without a mass movement. There is still some weakness of the right orbicularis palpebrarum when the eye is closed, without associated movement of the lower face.

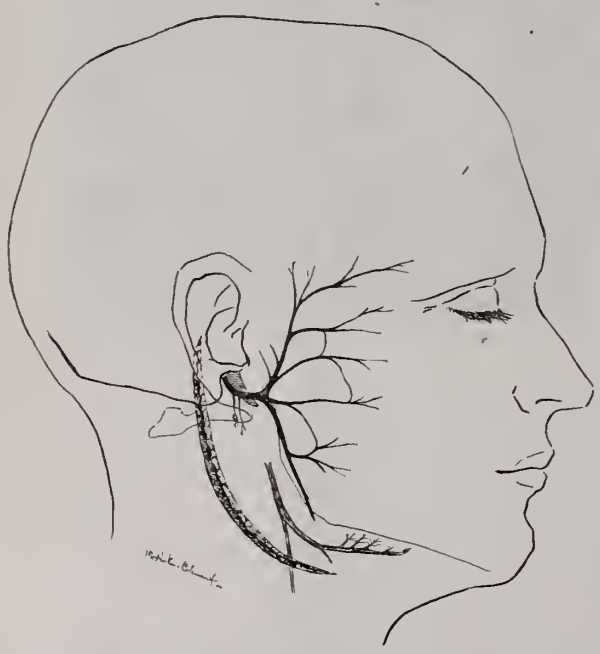
(D) Appearance of tongue after section of the hypoglossal. Note marked deviation to the right, and atrophy. This causes no interference with speech.

(F) Movement of the previously paralyzed side. There is some evidence of mass movement in the effort, but the patient was later able to overcome this satisfactorily.

cles has not taken place, most surgeons who are interested in nerve operations would probably favor operation in the belief that a certain amount of benefit might be expected from the operation. When one or two of the main branches of the nerve have failed to regenerate because of the lesion of the trunk, the propriety of operation might be determined to some extent by the patient's concern about the deformity. Fortunately, regeneration, if it takes place at all, is usually fairly complete in all of the main branches.

The mechanical treatment of patients with facial paralysis should not be neglected. Light facial massage, galvanic electricity, and adhesive splinting of the paralyzed side (Frazier), not only comfort the patient, but give actual help. (Case 3, E).

Operation upon the facial nerve for paralysis, except in rare cases of direct suture of the trunk, substitutes the hypoglossal or spinal accessory for the central segment of the facial, thus restoring the connection between the cor-



Facio Hypoglossal Fusion. Fig. 1.—Curved incision beginning above tip of mastoid and following skin crease parallel to the lower border of the mandible. Facial nerve shown in heavy black, with two small branches from main trunk to digastric. Note segment of hypoglossal parallel to ascending ramus of jaw.

tical centers and the paralyzed facial muscles. The value of this type of nerve fusion cannot be questioned if the operation is well conducted in suitable cases.

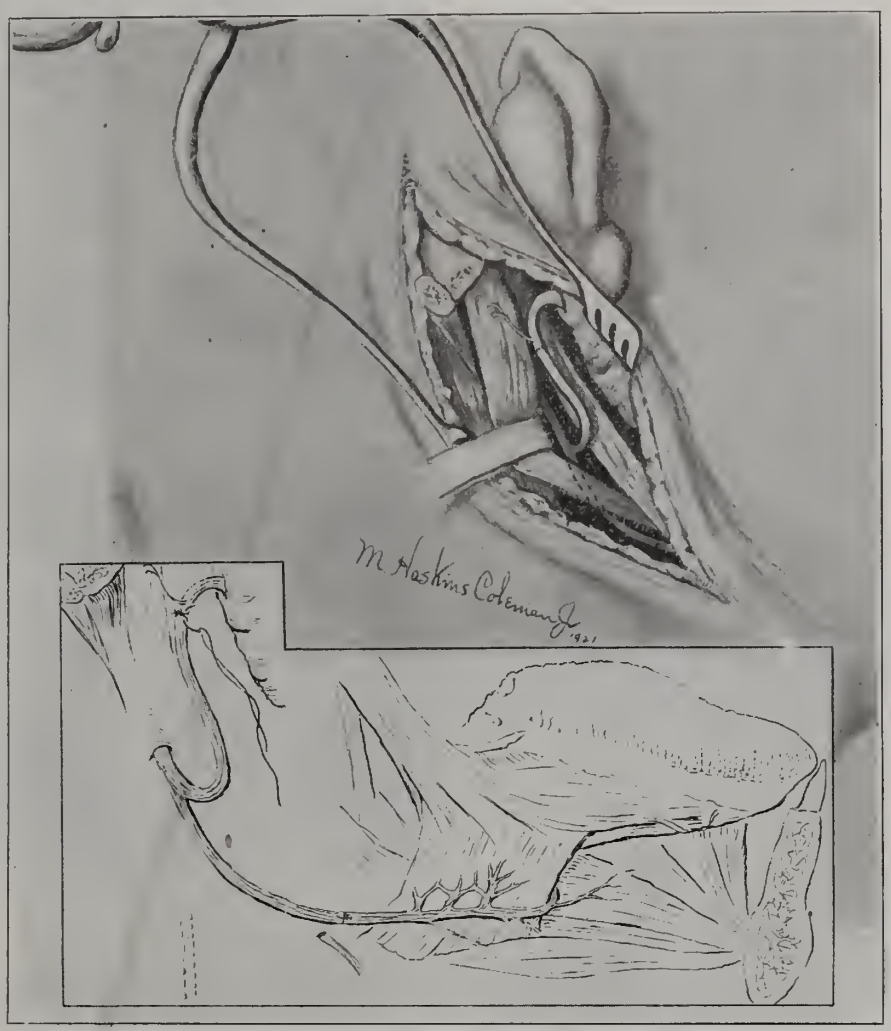
Facio-Hypoglossal Fusion. Fig. 2.—Retraction of the sternomastoid backward for better exposure of the digastric fossa, accomplished by chipping off the tip of the mastoid, carrying with it the attachment of the muscles. The small branches from the facial to the digastric are shown, and the facial trunk is seen entering the posterior border of the parotid gland. The facial trunk is divided periphreal to the point where the branches of the digastric break away, for reasons explained in the text. At the lower angle of the incision, the hypoglossal is seen dividing into the ansa and main branch to the tongue.

While no large series of well tabulated functional end results are available for comparison of facio-hypoglossal with facio-accessory fusion, we believe the hypoglossal should be preferred because of its functional similarity. The coarseness of spinal accessory movement, its wide anatomic and physiologic dissociation from ordinary facial expression, and the objectionable shoulder movements which may follow the anastomosis, have been frequently emphasized. Objection to the hypoglossal has been made by some, because it deforms the tongue, interferes with mastication, swallowing, and speech, and because it gives the most persistent and troublesome type of associated movements. The first two objections may be dismissed, because the deformity of the tongue is of no moment and, whatever interference with the function of the tongue there may be, immediately after section of one

hypoglossal nerve, soon disappears. Some patients seem to attribute the collection of food in the paralyzed cheek to the unilateral paralysis of the tongue. This inconvenience disappears with the resumption of buccinator function, to the loss of which it is mainly due. It is no doubt true that in some cases the associated movements of facio-hypoglossal anastomosis are obvious and persistent.

Facio-hypoglossal fusion may be very difficult if the extracranial segment of the trunk lies in scar tissue. The depth and protected position of the digastric fossa, the small size of the degenerated nerve, and the necessity for effective hemostasis, all combine to make the operation slow and tedious.

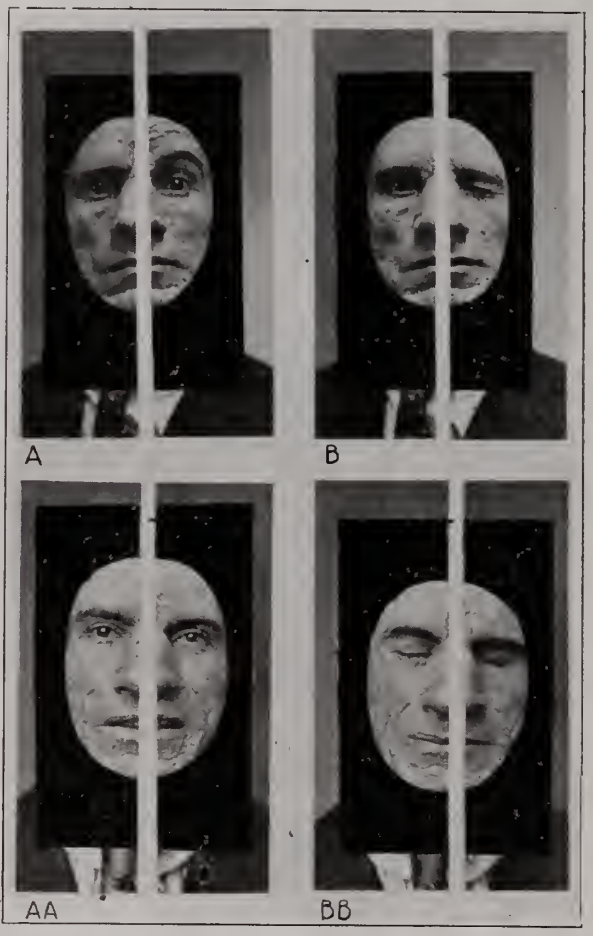
The skin-platysma incision usually begins above the tip of the mastoid and curves toward the angle of the jaw, following one of the skin creases parallel to the lower border of the mandible. (Fig. 1). The sternomastoid is retracted backward, and the tip of the mastoid process may be removed with its muscular attachment if necessary. (Fig. 2). The posterior belly of the digastric is exposed and held down with a small tape. The hypoglossal nerve may usually be seen at this stage of the operation, but it should not be disturbed



Facio-Hypoglossal Fusion. Fig. 3.—Digastric is held down by narrow wet tape. The main trunk of the hypoglossal has been sectioned far enough forward to permit approximation with the facial, without tension. When the digastric muscle is released, the site of the anastomosis lies between the digastric and stylohyoid muscles. Insert below shows the type of needle and suture used. The ansahypoglossi has been divided and removed from its course, which is indicated by the parallel dotted lines in the lower left hand corner of the insert. It is sutured into the main division of the nerve, as indicated.

until after the facial is divided. The guide to the facial is the small branch to the digastric muscle. With the digastric pulled down, this little branch is followed carefully upward and inward until the facial trunk is reached. We have found no other landmark so reliable in isolation of the facial trunk as the twig to the digastric, and this method of identification has greatly shortened the duration of the operative procedure. The trunk of the facial is stimulated with an electrode, and if unresponsive, it is divided just above its digastric branch. (Fig 3). No attempt is made to follow the nerve to the foramen. To section the nerve at this high level, often requires traction on the nerve, with more or less traumatism and delayed recovery. It seems best to save the nerve supply to the digastric, because this muscle stabilizes the base of the tongue on the paralyzed side.

The stylohyoid branch is apt to be destroyed whether the facial is divided at or below the foramen. The facial stump is protected with wet cotton, and the hypoglossal is then freed sufficiently close to the tongue to permit approximation to the facial without tension. The thyrohyoid branch of the hypoglossal must be sacrificed to allow the central segment of the hypoglossal to be carrid up to the facial. A fine silk suture is placed in the hypoglossal trunk distal to the point of section, before the nerve is divided. The union of the facial to the hypoglossal is made with arterial sutures and fine curved needles. Three or four epineural sutures are sufficient. The line of anastomosis rests between the digastric and stylohyoid muscles. If the digastric is carefuly handled, and its sheath is intact, adhesions about the line of suture should not be troublesome. The ansa hypoglossi is next divided sufficiently low to allow its central end to be joined to the distal stump of the main trunk of the hypoglossal. One penetrating suture of fine silk is used to unite these nerves. Drainage should be avoided in all nerve operations, and it is not required, provided oozing points have been carefully ligated with fine silk. The usual equipment for nerve surgery—small forceps, sharp knives, and fine needles and sutures,—are required for accurate apposition of these slender nerve trunks. No form of restraint is used on the head and shoulders after the operation. It is impossible for the patient to make tension on the anastomosis, provided the approximation of the nerve segments was accomplished without tension. The patient usually stays in the hospital about ten days, and leaves with a firm wound and inconspicuous scar.



Case No. 4.—Facio-Hypoglossal Fusion, for complete paralysis of six months' duration, following the lesion of the nerve in the bony canal. Effort to elevate the brow and close the eye of the paralyzed right side is shown in A and B. Although the lower facial muscles were completely paralyzed, the patient had only slight deformity with the face in repose. Condition shown in (AA) and (BB), nearly two years after facio-hypoglossal fusion. Facial expression is fairly evident in (AA). There is only slight asymmetry of the mouth in smiling.

(BB) Closing the eye of the paralyzed side is accomplished by associated movement of the face.

The first sign of returning function after anastomosis is shown by improvement in the tone of the paralyzed muscles, and this may be detected about seventy-five days after operation. The asymmetry of the face seems to be less marked, and palpation of the muscles indicates that the flabbiness is disappearing. Voluntary movement has usually first appeared, in my cases, at the angle of the mouth, and it

may be expected in three and a half months after operation, although, in one patient, the first contraction of the muscles was observed in the orbicularis palpebrarum on the 132nd day. Improvement is rapid from the first appearance of voluntary movement, until all of the important muscles, except the orbicularis oris and frontalis, show contraction. Recovery of these muscle groups, in my own experience, has been delayed and unsatisfactory. The recovery of voluntary movement is first expressed by co-ordinated mass contractions which involve all of the facial musculature of the affected side capable of response. Gradually, the groups of muscles acquire a dissociation of action, and isolated movements become possible, more quickly if the patient persists in intelligent effort at re-education of the confused neuro-muscular mechanism.

The physiologic situation created by anastomosis of two motor cranial nerves has been subjected to much speculation, but little proof of the precise nature of readjustment of cortical function has been submitted to explain the so-called re-education of muscle groups, which is essential to isolated movements and facial expression. If the cortical centers for facial movement and expression continue to control the facial muscles through associational tracts connected with the tongue center, after the anastomosis of the two nerves, then the problem of re-education in these cases is more easily understood. It is difficult to believe, as some have pointed out, that the hypoglossal center acquires functions primarily residing in the facial area. Recovery of emotional expression is the most difficult achievement of operations for facial paralysis. It appears that this might be superimposed upon the accurate dissociation of the action of the muscle groups, and the latter may be accomplished by patient effort. We have seen one patient, operated upon more than two years, who closely imitates facial expression, but the effort lacks the ease and spontaneity of genuine emotional response.

There is very likely to be some permanent deviation of the mouth toward the unaffected side when the patient smiles, but this is not unusual in severe cases of facial paralysis which recover through regeneration of the nerve without operation. Moreover, mass movements of the face are not unknown after recovery from severe attacks of Bell's paralysis.

If simply the return of normal muscle power constituted the sole requirement of facio-hypoglossal anastomosis, as is largely true in tests for peripheral nerve recovery, fusion operations for facial paralysis would perhaps be among the most efficient of all operations upon motor nerves. Return of muscle power in the

Case No. 5.—Facio-Hypoglossal Fusion for complete parlaysis right facial nerve of six months' duration, following lesion of the nerve in the bony canal.

(A) Face in repose. Note marked deviation of the mouth to left. This case had less sagging of the lower lid than cases No. 3 and 4, with greater deformity of the muscles of the lower face.

(B) Fifteen months after facio-hypoglossal fusion. Note contraction of the muscles of the previously paralyzed side, and the corrugations about the eye, indicating the action of the orbicularis palpebrarum.

(C) Face in repose. Note symmetrical appearance of the two sides of the face. The skin creases in the cheek of the previously paralyzed side are clearly shown. These creases, after recovery from facial paralysis, do not always follow the old lines.

facial muscles, however, is not an equivalent of complete return of function, although the restoration of movement is all that the new nerve-muscle mechanism alone can be expected to accomplish.

Complete function of the muscles of expression arises from the proper readjustment of the cortical areas represented by the fused nerves. However successful the fusion of the two nerves may be in restoring muscle contractility, the critical test of the results of the operation must be applied in terms of efficient readjustment of those higher centers, whose function is the production of facial expression.

503 *Professional Building.*

PROTEIN SENSITIZATION IN BRONCHIAL ASTHMA, HAY-FEVER, AND ALLIED CONDITIONS. WITH REPORT OF WRITER'S OWN CASE.*

By GRAFTON TYLER BROWN, M. D., Washington, D. C.

Although all of our practical working knowledge of anaphylaxis has been evolved in the last few years, I fully realize that in preparing a paper on protein sensitization I am not treading on virgin soil, as evidenced by the rapidly increasing literature on this subject.

General Considerations: Charles Richet, in 1902, injected a dog with some poison extracted from the tentacles of actiniae. This injection had no apparent harmful effect. Twenty-two days later he repeated the injection, using exactly the same dose, with the idea in mind of giving gradually increasing doses in the future, and thus producing a condition of prophylaxis in the dog to that particular poison. Much to his surprise, however, before he had hardly completed the injection, the dog was taken suddenly ill and died within thirty-five minutes. As this condition was the exact opposite of prophylaxis, he christened it anaphylaxis. In other words, the first dose had sensitized the dog to that particular poison, and the second dose caused sufficient shock to produce death.

Animal experimentation was carried on by different investigators in many countries, and we have thus come to know that the interesting and varied phenomena of anaphylaxis are due to sensitization to some foreign protein. The first dose or injection of foreign protein which produces the condition of sensitization, is known as the sensitizing dose. Following this first or sensitizing dose, there is what may be termed an incubation period, of approximately ten days, during which the blood and tissues of the animal are endeavoring to form antibodies, in response to the stimulus of the foreign protein. Any further injections given during this so-called incubation period will have no effect other than to prolong the incubation period. This is just what we would expect, as the further injections at this time merely increase the amount of foreign protein, and therefore a longer time is required for so-called antibody formation.

Frank Coke[1] terms the material formed by the blood and tissues in response to the introduction of foreign protein as "digestive substance." At the termination of the incubation period, which corresponds to the completion of the formation of antibodies, or "digestive substance," there is undoubtedly an excess of antibodies or "digestive substance" thrown off into the blood and tissues. Should there be remaining in the blood or tissues of the animal any of the foreign protein originally injected, and not already disposed of by this process, the mere contact of a small amount of this foreign protein with the specific antibodies or "digestive substance" formed, would cause some anaphylactic manifestation at this time. This may furnish a plausible explanation for the serum rashes, which frequently appear some days after an injection of serum, as illustrated by the following case.

Dr. Frederick Schreiber, of this city, had a patient whose history showed her to be a bleeder, and upon whom he was to perform a tonsillectomy. As a wise precautionary measure, he had a Bogg's test performed, which showed a delayed blood coagulation time. Preliminary to the operation, he prescribed massive doses of calcium lactate and also gave an injection of hemoplastin. She made an uncomplicated recovery from the operation, but showed some local urticarial rash at the site of the injection. About ten days later he was called to see her and found she was covered from head to foot with an urticarial rash. He gave her an injection of adrenalin chloride, which cleared it up almost immediately.

---

*Read before the Medical Society of the District of Columbia, February 22, 1922.

Feeling that this was out of his line of work, he called in Dr. Duehring, and they diagnosed the condition as an unmistakable case of serum sickness.

Anaphylactic manifestations vary in different animals, but generally speaking they are as follows: the animal appears restless almost before the completion of the injection; scratches at muzzle as if irritated; respirations are increased, and dyspnoea sets in; vomiting; diarrhoea, with passage of blood; micturition; tetanic spasms; somersaults; paralysis; collapse: cessation of breathing; death.

A guinea-pig that has been sensitized to horse serum, will react to horse serum, but not to beef serum, and *vice-versa*. In other words, protein sensitization is absolutely specific. When an animal is injected with a sensitizing dose of some foreign protein, the form of anaphylaxis produced is known as active anaphylaxis. If some of the blood serum from a previously sensitized guinea-pig is injected into a normal guinea-pig, the sensitization to that particular protein will be transferred to the second animal, and an exciting dose of the specific protein given immediately to the second animal will cause anaphylactic shock. This is known as passive anaphylaxis. The transference of sensitivity, from one animal to another, is of considerable clinical importance, considering the great number of blood transfusions that are being performed. Ramirez[2], of New York city, reported a case bearing on this point.

A patient was transfused with 600 c. c. of blood, from an apparently healthy donor. The transfusion was completely successful, but about two weeks later, on going out for a carriage drive, the recipient was seized with a severe attack of asthma, the first that he had ever had in his life. Dr. Ramirez, was called in to the case at this point, and on testing found him to be sensitive to horses. Also on testing the donor and going into his history, he was found to be a typical horse asthmatic.

Here we have a perfect illustration of transference of sensitivity in human beings. However, another patient had been previously transfused from this same donor, with an even larger quantity of blood, but has never developed asthma. This may be explained on the assumption that the recipient's blood was for some reason resistant to the development of sensitization; or he may have developed sensitization, and this sensitization has not manifested itself in the form of asthma. Ramirez does not give the blood groupings of these patients, but I assume they are the same. He sounds a timely note of warning, that in addition to the routine examination (Wassermann, blood grouping, etc.), to which donors for transfusion are subjected, their history, with regard to any possibility of anaphylaxis, should be very carefully gone into and, if indicated, tests for protein sensitization should be made.

At this point it may well be emphasized that, previous to the administration of diphtheria antitoxin, the patient's history should be carefully gone into, and if there is any evidence of sensitization, a test with horse serum protein should be performed, particularly if the patient is an asthmatic. Neglect to do this may result in severe anaphylactic shock, or even death.

Oscar M. Schloss[3], in numerous painstaking experiments on children, who had idiosyncrasies to various articles of food, brought anaphylaxis out of the field of animal experimentation, into that of practical clinical medicine. He was the first to establish that it was the protein in the food, that was the offending element, and that all the other constituents were harmless. Secondly, he proved that this idiosyncrasy, or hypersensitiveness, to some particular food protein, was absolutely specific. Thirdly, he demonstrated that the offending protein could be detected by the cutaneous test.

Anti-anaphylaxis: There is a condition which may occur known as anti-anaphylaxis. This means that following a toxic dose of protein which causes, for example, an attack of urticaria, there follows a period of anti-anaphylaxis or temporary desensitization, during which the skin test is negative, and the offending food may be eaten with impunity.

Schloss[3] reported two cases of children in which the ingestion of egg was followed by a generalized urticaria within one to three hours. Following this toxic dose of egg protein, these children were able to eat egg without any symptoms, for a period of twenty-two to forty days. During this period, the skin test with egg protein remained persistently negative. Simultaneously with the reappearance of a positive skin reaction to egg protein, the ingestion of egg was followed by an attack of urticaria.

Bronchial Asthma: True bronchial or

spasmodic asthma is one of the best clinical examples that we have of protein sensitization. Chandler Walker, of Boston, has probably done more original research work on asthma than any other investigator in the world. He and his co-workers, June Adkinson and R. P. Wodehouse, have published a series of some twenty-four intensive studies[4] on the subject. These studies were made possible through a gift of Mr. Charles F. Choate, Jr., to the Peter Bent Brigham Hospital. The revolutionary nature of these studies may be appreciated when we stop to realize that, previous to their publication, asthma was considered an incurable disease of unknown etiology. Walker, in a series of over 600 asthma cases, found 48 per cent to be sensitive to some foreign protein, and 52 per cent non-sensitive. He, therefore, groups asthma cases into two classes: first, those which are found sensitive to some foreign protein, which he designates as true bronchial or anaphylactic asthma; second, those which are not found sensitive to any foreign protein, which he designates as asthmatic bronchitis. Considering the innumerable foreign proteins in our environment, however, I rather incline to the opinion that a large proportion of these so-called non-sensitive or asthmatic bronchitis cases are also due to sensitization to some foreign protein, or perhaps some chemical preparation, and that we have merely failed to detect the offending protein or other substance. Of the sensitive cases, at least 80 per cent can be cured of their asthma by specific protein therapy, and another 10 per cent of these cases can be cured by proper vaccine therapy, either alone or in combination with specific protein therapy. Of the non-sensitive cases, at least two-thirds can be relieved of their attacks by proper vaccine therapy.

Asthma may be due to sensitization to any foreign protein with which the patient comes in contact. The offending protein may enter the body by inhalation, ingestion, absorption, or infection. Inhalation applies to the proteins of plant pollens, and of animal emanations such as hair, dandruff, feathers, etc. Ingestion and absorption apply to food proteins. Absorption may also take place through the conjunctivae, nasal mucous membrance, or, in rare cases, even through the unbroken skin. Infection applies to bacterial proteins. This is a good place to emphasize the fact that bacteria may act in two ways: first, as a typical infection with the formation of toxins; and second, the patient may be sensitive to the protein contained in the bodies of the bacteria.

Technic of Cutaneous Test: The diagnosis of the offending protein or proteins, in the individual case, is made by means of the cutaneous test, the technic of which is as follows: both arms of the patient are bared to the shoulder, and extended with the palms up, upon a table adjusted to the proper height. The flexor surfaces of the upper arms and forearms are then cleansed with 50 per cent alcohol. A series of linear cuts about 1/8 inch long are made with the tip of a fine scalpel. These cuts should be about 1½ inches apart and should penetrate the outer layer of the skin, but should not be deep enough to draw blood, other than the merest trace, which is often unavoidable. To each of these scarifications, with the exception of the first and last, which should be kept as controls, is applied a small quantity of purified powdered protein of the substances to be tested. To each of these is then added a drop of tenth-normal (0.4 per cent) sodium hydroxide to dissolve them and permit of rapid absorption. A drop of the solvent is also applied to each of the control cuts. A positive reaction occurs in from five to thirty minutes, and is indicated by a definite urticarial wheal about the site of the cut, at least 0.5 cm. in diameter, surrounded by an area of more or less erythema. After thirty minutes, the proteins are washed off and the reactions interpreted. Larger reactions than 0.5 cm. are denoted by a series of plus marks, and smaller ones are called doubtful. These doubtful reactions should not be ignored, but should be looked upon as danger signals and repeated at some future time. In some cases a positive reaction is indicated by a large area of erythema, with no wheal formation.

Delayed Reactions: With bacterial proteins, there is still a third form of positive reaction, which appears hours later, the site of the inoculation being elevated, hot, inflamed, and slightly painful, having all the appearances of a mild infection. Unless attention is paid to these delayed reactions, a number of positive reactions will be missed. It seems that some such mistake must have occurred at the Mayo Clinic[5], where 365 tests were performed with the proteins of staphylococcus pyogenes aureus and albus, with not a single positive reaction, whereas Walker estimates

that 10 per cent of all asthma cases are sensitive to some bacterial protein, and my own observations confirm this estimate.

Report of My Own Case: A recital of my own case is the best evidence that I have to offer of the great value of protein sensitization work. At the age of 6 years, I developed bronchial asthma, and was a martyr to the disease for twenty-two years. At the onset of my trouble, I had a very bad pair of tonsils which were thought to be the cause of my difficult breathing. A tonsillectomy and adenectomy was performed at this time by Dr. Charles Richardson, but my dyspnoea persisted and was then recognized as bronchial asthma. From that time on I suffered more or less severely with frequently recurring asthmatic attacks. At times the attacks were so severe that I was unable to go to bed at all, but was forced to spend the night in a chair. I obtained relief, during these attacks, by the inhalation of fumes from some sort of preparations which I burned, containing nitrate of potash, stramonium, and belladonna. Whenever I had a cold, I was completely incapacitated. My first relief was obtained by my parents taking me to Atlantic City. I was having a very severe attack at the time, and my asthma left me almost immediately upon our arrival there, and I was entirely free from asthma the entire time we were there. Upon coming back home, my asthmatic attacks returned. This experience has been repeated innumerable times in my case, i. e., my asthma would always leave me promptly upon going to Atlantic City, but it would invariably return on coming back home. This was erroneously attributed to an unfavorable climate in Washington, because in 1913 we moved to a new residence in the same neighborhood, and my asthma left me entirely for two years, and then returned as bad as ever. I took up the study of medicine, with the hope of finding a cure, but was discouraged by my professors telling me there was no cure for asthma. I have tried potassium iodide, Hare's anti-asthmatic prescription, benzyl-benzoate, and other preparations internally, but with no results other than to cause a digestive disturbance. In an effort to obtain some relief from my suffering, I even resorted to osteopathy, chiropractic, and Christian science, but they all proved dismal failures. In 1919, while an intern in the Atlantic City Hospital, I heard and read something about protein sensitization work as applied to asthma. I obtained some twenty-five principal food proteins with which I tested myself, but they were all negative. Dr. Moulden, of this Society, who is himself a sufferer from hay-fever, had also become interested in this work and obtained some few proteins. He tested me with the ones he had, and got a marked reaction to dog hair protein. I then went to Philadelphia and was tested out by Dr. Alexander Sterling, who found me sensitive to dog hair (plus three), cat hair (plus one), horse dander (doubtful), and negative to all other proteins. Have since performed innumerable tests upon myself, with always the same results, thus convincing me of the absolute specificity of the work. The explanation of my case is simple. At my former residence we always had a number of cats. When I would go to Atlantic City, it merely meant getting away from the cats, which were the cause of my trouble at that time. The two years' freedom from asthma, on changing my residence, was due to the fact that we got rid of our cats. Then someone gave us a dog, and this started my asthma again, as bad as ever. Have gotten rid of our dog, and treated myself with gradually increasing injections of dog hair protein, and, since the completion of this treatment, have been entirely free from asthmatic attacks.

My own case is of special interest because it is one of the very few cases recorded in the literature in which dog hair protein gave the dominating skin reaction, or, in other words, in which the inhalation of the epidermal emanation from dogs was the chief cause of asthma. Most other cases which were sensitive to dog hair protein were also more sensitive to the hair of other animals, such as horses or cats. This shows the absolute necessity of making a specific diagnosis by cutaneous tests before treatment is attempted.

To determine the degree of sensitivity of a patient, tests should be made with varying dilutions of the offending protein, i. e., 1:100,000, 1:10,000, 1:1,000, and 1:500. Treatment should be started with the strongest solution, which fails to give a positive skin reaction. Asthmatic patients should be tested routinely with all food proteins which enter into their daily diet, as well as with the hair or dandruff of such domestic animals as are about the home or place of occupation. Seasonal, or hay-asthmatics, should be tested with pollen proteins.

Those asthmatics who are susceptible to colds, as well as those who do not react to any other form of proteins, should be tested with bacterial proteins. The more proteins that are tried, the more certain one can be of the diagnosis, i. e., that all offending proteins have been detected. I use 175 different proteins, and am continually adding to this supply.

Comparison of Cutaneous and Intra-cutaneous Methods: Some workers in this field, notably Cooke of New York, use what is known as the intra-cutaneous test in preference to the cutaneous test already described. In the intra-cutaneous method, minute quantities of the substances to be tested are injected into the layers of the skin, with a fine needle. I see no advantage to this method over the cutaneous one, and feel that it has a number of disadvantages. The intracutaneous method: first, subjects the patient to a very trying ordeal; second, is difficult of interpretation; third, is non-specific at times, i. e., gives a number of false reactions; fourth, is no gauge to the progress of treatment, i. e., treatment sometimes decreases the size of the reaction, sometimes increases it, and it sometimes remains unchanged; and fifth, may give a very sore arm or even some anaphylactic shock in a very sensitive patient, especially if the needle should penetrate below the skin. On the other hand, the cutaneous test: first, is practically painless; second, is easy of interpretation; third, is absolutely specific; fourth, is an exact gauge to the progress of treatment, i. e., treatment progressively decreases the size of the reaction; fifth, gives no sore arm or anaphylactic shock, even in a very susceptible patient, as the protein may be washed off at any time, thus checking its action. Walker[4] (Study XVII) felt this comparison of the cutaneous and intra-cutaneous methods of sufficient importance to devote an entire paper to the subject.

Hay-fever: Another typical clinical manifestation of anaphylaxis is seasonal hay-fever, which is usually due to sensitization to the proteins of plant pollens, whereas non-seasonal or perennial hay-fever may be due to any foreign protein. Of the seasonal hay-fever cases, 45 per cent may be completely relieved of all symptoms by specific protein therapy, another 45 per cent may be practically relieved of all symptoms, and, in only 10 per cent of the cases, is this method a failure. Treatment of these cases requires from ten to fifteen gradually increasing injections, given at weekly intervals. Pre-seasonal treatment is by far preferable to co-seasonal treatment, i. e., a specific diagnosis should be made by cutaneous tests, and treatment started far enough in advance to have the patient as completely desensitized as possible just previous to pollination of the particular offending plant.

I am absolutely opposed to the use of any stock mixed pollen preparations, such as are put on the market by a number of commercial houses, for either diagnosis or treatment. No patient should be treated with a mixture of pollens, without first making a specific diagnosis as, by so doing, it is only guesswork, and, furthermore, we are liable to sensitize the patient to some new pollen to which he is not already sensitive.

The pollens are grouped biologically or botanically into a number of groups, i. e., *Gramineae*, such as timothy, June grass, red top, orchard grass, sweet vernal grass, corn, rye, etc.; *Compositae*, such as ragweed (dwarf), ragweed (giant), sunflower, goldenrod, daisy, etc.; *Leguminosae*, etc. The patient should be treated with the pollen which gives the dominating reaction in any particular group. Lack of space prevents any further details as to treatment.

Allied Conditions: *Urticaria*, or hives, is usually due to sensitization to some food protein.

Angioneurotic edema is also frequently proven to be due to protein sensitization. Austrian[6], of Baltimore, reported a case due to pork.

Asthmatic patients frequently give a history of *eczema* in early childhood. Schloss[7], Blackfan[8], Ramirez[9], and O'Keefe, each reports a series of eczema cases in which at least 40 per cent were proven to be of anaphylactic origin.

Sutton[10] reports several cases of *dermatitis* due to ragweed.

Conlon, and Walker[11] report cases of *conjunctivitis* due to food sensitization.

Colds and *bronchitis* are probably of two types, infections and anaphylactic.

Dr. Hazen[12] reported a case of *erythema multiforme*, due to sensitization to oysters.

In addition to the conditions already mentioned, there are a number of other closely related ones of unknown etiology, such as migraine, epilepsy, paroxysmal hemoglobinuria,

psoriasis, etc., which may eventually be proven to be due to some form of protien sensitization.

SUMMARY: About one-half of all cases of bronchial asthma can be proven to be due to sensitization to some foreign protein. In view of the innumerable foreign proteins in our environment, there is reason to assume that a considerable proportion of the so-called non-sensitive cases are also due to sensitization to some foreign protein or chemical agent, and that we have merely failed to detect the offending protein or substance. The sensitive asthmatic can usually be completely relieved of all attacks by elimination of the offending protein or proteins from his environment, by specific protein therapy, or proper vaccine therapy, or by a combination of these.

The offending protein can usually be detected by the cutaneous test, which is by far preferable to the intra-cutaneous method.

Unless attention is paid to delayed reactions when testing with bacterial proteins, a considerable number of positive reactions will be missed.

The more proteins that are used for testing, the more certain one can be of the diagnosis.

Seasonal hay-fever is nearly always due to sensitization to pollen protein, whereas non-seasonal or perennial hay-fever may be due to sensitization to any foreign protein. Pre-seasonal treatment is by far preferable to co-seasonal treatment.

No stock mixed pollen preparations should be used for either diagnosis or treatment.

A considerable proportion of all cases of urticaria, angioneurotic edema, eczema, dermatitis, conjunctivitis, colds, bronchitis, and erythema multiforme can be proven to be due to protein sensitization.

In addition to the affections already mentioned, there are a number of other related ones, of unknown etiology, such as migraine, epilepsy, paroxysmal hemoglobinuria, psoriasis, etc., which may eventually be proven to be due to some form of protein sensitization.

1726 *M. Street, Northwest.*

BIBLIOGRAPHY.

1. Coke, F.: Asthma and Anaphylaxis, Brit. M. J. 1, No. 3141, p. 372 (March 12), 1921.
2. Ramirez, M. A.: Horse Asthma Following Blood Transfusion, J. A. M. A. 73: 984 (Sept. 27), 1919.
3. Schloss, O. M.: A Case of Allergy to Common Foods, Am. J. Dis. Child. 3: 341 (June), 1912. Allergy to Common Foods, Tr. Am. Pediat. Soc. 37:62, 1915.
4. Studies I-V, J. M. Res. 35, No. 3, p. 373, 391, 487, 497, 509, 1917.
   Studies VI-VIII, J. Immunol. 2, No. 3, p. 227, 237, 243, (April) 1917.
   Study IX, Am. J. Bot. 4:417 (July) 1917.
   Studies X-XIII, J. M. Res. 36, No. 2, p. 231, 237, 243, 295, 1917.
   Study XIV, J. M. Res. 36, No. 3, p. 423, 1917.
   Study XV, J. M Res. 37, No. 1, p. 51, 1917.
   Studies XVI and XVII, J. M. Res. 37, No. 2, p. 277, 287, 1917.
   Study XVIII, J. A. M. A. 70: 897 (March 30), 1918.
   The Cause and Treatment of Bronchial Asthma, Mad. Clin. of North Am. 1, No. 4, p. 1177 (January), 1918.
   A Clinical Study of 400 Patients with Bronchial Asthma, Boston M. &. S. J. 179: 288, 1918.
   The Treatment of Bronchial Asthma with Proteins, Arch, Int. Med. 22: 466 (October), 1918.
   The Treatment of Bronchial Asthma with Vaccines, Arch. Int. Med. 23: 220 (February), 1919.
   Sensitization and Treatment of Bronchial Asthmatics with Pollens, Am. J. M. Sc. 157, No. 3, p. 409 (March), 1919.
   Bronchial Asthma, The Oxford Medicine, New York, 1920, Oxford University Press, 2.
5. Sanford, A. H.: Protein Sensitization in Asthma and Hay-Fever, Minnesota Med. 3, No. 4, p. 174 (April 20), 1920.
6. Austrian, C. R.: Angioneurotic Edema. A Preliminary Report, South. M. J. 12, No. 7, p. 348 (July), 1919.
7. Schloss, O. M.: Allergy in Infants and Children, Am. J. Dis. Child. 19, No. 6, p. 433 (June), 1920.
8. Blackfan, K. D.: Cutaneous Reactions from Proteins in Eczema, Am. J. Dis. Child. 11: 441, 1916.
9. Ramirez, M. A.: Protein Sensitization in Eczema. Report of Seventy-Eight Cases, Arch. Dermat. Syph. 2, No. 3, p. 365 (Sept.), 1920.
10. Sutton, R. L.: Ragweed Dermatitis, J. A. M. A, 72: 126 (May 3), 1919.
11. Walker, I. C.: Frequent Causes and the Treatment of Perennial Hay-Fever, J. A. M. A. 75: 782 (Sept. 18), 1920.
12. Hazen, H. H.: Severe Erythema Multiforme with Anaphylaxis due to Oyster Protein, J. A. M. A. 62: 695, 1914.

PNEUMONIA.

Etiology and Diagnosis.*

By PAUL DAVIS, M. D., Roanoke, Va.

Briefly speaking, pneumonia is a disease marked by inflammation of the lung. The etiology of this process is as varied here as in inflammation of other parts of the body, and for this reason it is well to have some classification before entering into a discussion of the subject. Of all the divisions and subdivisions mentioned, it is conceded by all that a definite distinction should be made between

*Read at the meeting of the Southwestern Virginia Medical Society in Pulaski, May 11 and 12, 1922.

lobar pneumonia and broncho-pneumonia. I shall use these two as a foundation for this paper and endeavor to take up a few of their principal gronpings under their separate headings.

Lobar pneumonia is a definite and clear-cut disease entity caused by the pneumococcus. There are four types of this organism, and the disease is usually classified according to the type of pneumococcus causing it. Practically all types of the pneumomococcus are found in cultures from the nose and throat of normal individuals. If the resistance of this individual is lowered; if these organisms are increased to such an extent as to enable them to overpower the normal resistance: or if a more virulent organism is introduced, the lung becomes the seat of an inflammatory condition known as lobar pneumonia. Why the lung is the site of election for this organism has not been definitely proven. Since the fact that it gains entry by way of the air passages and not through the blood stream has been right well established by Cecil and Blake[1] of New York, it is very easy to presume that the lung is attacked only because it is the first organ reached; for we know that the pneumococcus, when it does reach other parts of the body, produces quite definite and serious lesions. An excellent example of this is pneumococcic meningitis which so frequently follows fractures at the base of the skull.

Since the epidemics of nineteen eighteen and nineteen twenty, the discussion of Lobar Pneumonia has excited little interest as compared to broncho-pneumonia. This is a very indefinite term which implies an extension of the inflammatory process from the bronchi into the lung. While this is usually the case, the fact that it is always true has been widely disputed. When a man is well to-day and has an overwhelming broncho-pneumonia tomorrow, it is hard to believe that this was an extension of a bronchitis which was never found, instead of a primary pneumonia. For this reason it seems to me that the subject can best be discussed by taking up epidemic or "flu" pneumonia under a separate heading.

The usual type of broncho-pneumonia is a comparatively rare disease and occurs principally in childhood and old age. It usually follows a bronchitis and the extension is often so gradual that it is hard to say just when pneumonia has begun. The etiology is still obscure. In the light of present evidence, it is probably best regarded as a mixed infection which gains a foothold through some predisposing cause. The wide variation in these causes as well as in clinical types of the disease would seem to strengthen this conclusion. It is this type of pneumonia which so frequently goes hand in hand with measles, whooping cough, scarlet fever and diphtheria. It may accompany or follow any of the debilitating diseases. Inhalation of irritating gases and aspiration of foreign particles and fluids also frequently give rise to a broncho-pneumonia. Post-operative or ether pneumonia would probably belong to this class. Another type which is somewhat different but had best be mentinoed here is septic pneumonia which occurs with sepsis elsewhere.

Anatomically, epidemic pneumonia is a broncho-pneumonia but clinically it deserves a place alone. It is by no means a new disease, having begun in the armies of Canada and spread over the United States in 1812. Another big outbreak followed measles during our Civil War. In no former case, however, has it ever reached the magnitude it assumed in the recent World War. First following measles in nineteen seventeen, it became a separate and clear-cut disease entity; then, following and accompanying influenza in nineteen eighteen and nineteen, it caused more deaths in our army than the enemy bullets. The causative organism has been much discussed, and the most logical conclusion seems to be that the same organism was not responsible in different localities. The streptococcus appears to have been found more frequently than any other. In the five hundred cases which were under my care in France, this was the predominating organism in practically all cultures from the sputum. Unfortunately, we did not culture the diseased lung at autopsy, so our work was not absolutely conclusive, although in other places where this was done, the streptococcus was also found in the pneumonic area in the lung. In our hospital the streptococcus hemolyticus, and influenza bacillus occurred rarely, while in other camps they were found in such overwhelming numbers that they were considered as the causative factor by every competent man.

There are many points in favor of the influenza bacillus or bacillus of Pfeiffer. In the

first place this organism is small, hard to find, hard to culture, and hard to stain, and is frequently overlooked by other than the most expert bacteriologists. Also, Blake and Cecil[2] of New York, produced broncho-pneumonia in monkeys by intracheal injections of the influenza bacillus. On the other hand, all efforts to produce the disease in man by using cultures of this bacillus have failed.[3]

The theory that influenza and its attending pneumonia is produced by a non-filterable virus also has numerous supporters, and much might be said for this theory in the way of argument.[4]

However, after gathering all the evidence, we are finally forced to conclude that there probably is no specific organism or virus, and that, if there is, it certainly has not been definitely proven.

Diagnosis.

The diagnosis of pneumonia as a rule presents few difficulties. The classical picture of lobar pneumonia is easily recognized with its sudden onset, pain in the side, chill, dyspnoea, headache and vomiting, soon followed by cough and the expectoration of rusty sputum. Sometimes the referred pain to the abdomen leads to a diagnosis of appendicitis, but this mistake would be made less frequently if careful chest examinations were made on all cases.

Broncho-pneumonia, on the other hand, is a disease much more difficult to diagnose. Occurring so frequently as it does along with other acute conditions, it is often overlooked, it presents no definite clinical picture and the areas of consolidation in the lung are often so small that the physical findings are uncertain. Usually the respiratory rate is increased but sometimes not. The blood picture is not definite. As a rule there is very little leucocytosis, especially in the type which follows influenza. Cyanosis is the rule rather than the exception in broncho-pneumonia, and this with a rapid respiration and the finding of fine rales below the angle of the scapula posteriorly will usually lead to a correct diagnosis. Especially is this true of epidemic or "flu" pneumonia.

The pulmonary form of acute miliary tuberculosis often resembles broncho-pneumonia very closely. This usually gives early signs in the apices while broncho-pneumonia usually begins in the bases. The course of miliary tuberculosis is usually longer, the temperature remissions more marked, and the sputum examination in these cases often reveals the tubercle bacillus.

Pleural effusion is sometimes mistaken for pneumonia. Exploratory puncture is easy and simple and will eliminate this confusion.

Pulmonary abscess, encapsulated empyema, and interlobar empyema often raise a question, and an area of unresolved pneumonia can only be eliminated by a careful history and chest examination together with X-ray studies and exploratory puncture.

Pulmonary infarct often resembles pneumonia but examination in this case usually shows damaged heart valves. As a rule the patient is found sitting up in bed and seldom is this the case in pneumonia.

Atelectasis sometimes leads to confusion. It occurs with some forms of bronchitis, great hypertrophy of the heart, or large pericardial effusions. The only characteristic sign of this condition, as described by Pasteur, is a displacement of the apex of the heart toward the affected side.

Syphilis and carcinoma of the lung can usually be eliminated by the history.

Typhoid fever and meningitis often lead to a diagnosis of central pneumonia at first, but the clinical course and laboratory findings soon make the diagnosis clear.

In conclusion, I should say that, to my mind, increased respiratory rate is the sign that should always guide to pneumonia. A respiration over twenty-five should point a finger of suspicion at the lung and demand it to be proven negative before another diagnosis is made.

Lewis-Gale Hospital

References.

1. Blake, F. G., and Cecil, R. L.: Jour. Exper. Med., N. Y., 1920, XXXI, 403.
2. Blake, F. G., and Cecil, R. L.: Jour. A. M. A., 1920, LXXIV, 170.
3. Rosenau, M. J.: Jour. A. M. A., 1919, LXXIII, 311.
4. Bloomfield, A., and Harrop, G. A.: Johns Hopkins Hosp. Bul., 1919, XXX, 1.

SYMPTOMATOLOGY AND TREATMENT OF PNEUMONIA.*

By GEORGE B. LAWSON, M. D., Roanoke, Virginia.
Physician to the Jefferson Hospital.

It is with a feeling of hesitation that I undertake a paper on the Symptomatology and Treatment of Pneumonia, because the patient

*Read at the meeting of the Southwestern Virginia Medical Society in Pulaski, May 11 and 12, 1922.

in the home offers somewhat of a different problem from what he does in the hospital; and a great majority of cases must be treated in the home and sometimes under the greatest hardships. In the well-equipped hospital, when in doubt, we are beginning to rely more and more on the laboratory, the X-ray, and the consultants along the different lines, and in this way we feel sometimes that we are losing certain elements of that keenness of diagnosis which the physician must have who has not these advantages. In many cases the physician is miles from another physician and must work out his problems alone. He must decide and take the responsibility at times, whether the patient is still a simple pneumonia or whether there is a surgical condition present, for which the patient should be sent to the hospital.

There is hardly a disease which has a more typical, or a more constant group of symptoms than a simple lobar pneumonia. It may come on after getting wet or after exposure to cold, or as in most cases, there are no causative factors that can be determined. It usually sets in abruptly with a chill that may be very severe, lasting from a few minutes to an hour. This chill gradually gives place to high fever and by the time the physician is called, we find the typical pneumonia picture which gives the diagnosis almost at a glance. The face is flushed. The patient has an anxious appearance and the respiration is very rapid and may be accompanied by a short expiratory grunt. There is dilatation of the nostrils with every breath. The patient complains of pain and this may be at the location of the disease or it may radiate to other parts, frequently giving definite abdominal symptoms, which may lead to operation. The patient has a hacking cough which may at first cause him to hold his side because of the pain. The cough may at first be unproductive, or it may bring forth a little mucus which gradually becomes more or less blood tinged, gradually changing to a rusty tenacious sputum which is so typical of pneumonia. There is little change in this picture for the first few days except that the patient becomes weaker and more toxic. The fever tends to remain at a more or less constant level. This disease may be very severe from the onset. It is rarely mild.

The broncho-pneumonia differs somewhat from the lobar pneumonia. It is found more in children, or more frequently as a sequela of some of the childhood diseases, especially whooping-cough and measles. In carefully going over the history of pneumonia, it is interesting to find that for a few years after the former epidemic of influenza there was a tendency for the pneumonias to be of the broncho type. This seems to be especially true during and since the recent influenza epidemic, which has greatly changed the ordinary pneumonia picture. We have all seen patients start in with a typical influenza and quickly develop moisture all through the lungs and die in a day's time. We have seen others start in with a pneumonia of apparently only a small area but quickly develop into a large effusion, which at first is slightly turbid and may take a few days to develop into a true pus. In other patients we have seen the onset almost from the first as a streptococcic pleural effusion, and the lung shows very little pneumonic changes. These are the types of cases that have increased the mortality of empyema.

At a varying period, usually from five to twelve days, the temperature falls rapidly—the so-called crisis:—respiration becomes less rapid, the pulse slower and the patient passes very quickly from a condition of extreme illness and discomfort to one of comparative well-being.

At times the pneumonia may not start in as a fulminative process, but as a low-grade irregular fever; and the pneumonia is hardly suspected until found by routine examination. This is especially true in the old, the weak, and the post-operative. In very severe cases of pneumonia there may be no crisis but the condition gradually becomes worse. The pulse becomes weaker and more rapid, the cyanosis becomes more marked, the patient seems sicker, and death occurs.

An apparently mild pneumonia that is getting along well may very quickly change to one of the severe type going rapidly on to death. In a number of patients with pneumonia, the process gradually improves and the fever falls slowly, the so-called lysis: and the patient gets well slowly, just as after any other sickness.

A few pneumonias will terminate in abscess formation. In a few patients, especially in the old and weak, a part of the lung will become gangrenous. Sometimes during the course of pneumonia, while the fever is still

high, there will develop an empyema, or, after the fever has dropped to normal, we may find in a few days that the patient does not seem so well, the appetite is poor, and there is an afternoon fever which gradually ascends. The patient looks toxic and upon examination, we find the typical empyema. If this is not drained, the patient gradually gets sicker and dies. However, in a few cases of empyema the pus may rupture into a bronchus, causing death by drowning. The pus may be coughed up, giving the patient temporary relief and sometimes permanent relief. However, a great many of the patients die of exhaustion. The pus in a few of the empyemas may rupture through the chest wall. We have had only two such cases in our series. In about 1,100 patients admitted to our hospital, we have had 103 empyemas, or about one in every hundred has been an empyema. Our rate would possibly have been higher but for the fact that our hospital was closed during the first influenza epidemic. Our death rate from empyema has been only seven out of 103 patients; and included in this number are two patients with subdiaphragmatic abscess rupturing into the pleural cavity. A few of these patients left the hospital before complete recovery and were not followed out. One patient had empyema first on one side and then on the other, and finally recovered. I have gone into these statistics merely to emphasize the good results that can be gotten in this condition, which is practically hopeless without surgical treatment. Sometimes I hear of a patient who died of fever or of some heart trouble following pneumonia, and I nearly always have the feeling that something might have slipped by in the line of diagnosis.

Pneumonia occupies almost the same place that it did a half century ago. It is still practically the leader in our death rate; and while we have been able to work marvels in other diseases in regard to their prevention and cure, we have in pneumonia no magical preventive as we have in typhoid; no magical treatment such as we have in diphtheria, malaria and syphilis. Even the scourge of tuberculosis is being greatly lightened by sanitary methods in prevention and by proper methods of treatment. The different methods in vogue in the treatment of pneumonia, the very many different drugs, vaccines and serums used, all taken together, are a confession of our weakness in the treatment of this disease. Yet, in spite of this, by putting the patient under the best sanitary conditions, by having good nursing and by using our weapons in a sensible way, we can, to a certain extent, reduce the mortality rate of this disease. In the prevention of pneumonia, general cleanliness should be enforced and the ordinary methods of sanitation carried out. The value of vaccination as a preventive has not been definitely proven as yet.

In the treatment of pneumonia, the personality of the physician must be such that he will have the confidence of both the patient and his friends. It will frequently require greater tact and skill to successfully handle the friends and relatives than it will the patient. If the home conditions are fairly good and good attention can be secured, the pneumonia patient is better if he is not moved from one place to another; for the exertion of any kind of travel seems to give a bad effect. I would even suggest that he be not moved to a hospital unless there is doubt about the condition present, which may be solved by the X-ray, laboratory tests, or unless a definite surgical condition has supervened. The physician should be on the alert to make use of any advantage that may be present in the home and teach the friends and relatives how to give the best help in the care of the patient. The patient should be kept in a comfortable bed and made as comfortable as possible. He should be in a fairly large, well-ventilated room. If the type of pneumonia is the simple lobar, it is better to have a great deal of fresh air in the room, and the room made very cool. The patient will possibly do better in a room with the windows open and with little, if any fire. You have often seen the almost immediate improvement in the patient when he has been kept in a small, hot crowded room, after the windows were opened and the fires allowed to go out, and every one except the nurse excluded from the room. The simple influenza and broncho-pneumonia, since the epidemic of influenza, do better in a room that is fairly well ventilated, but kept comfortably warm.

If the pneumonia patient is seen early, so that the chill is a troublesome factor, it may be relieved by hot blankets, or by hot lemonade or a mild stimulant. If the pain in the side is very severe, it may require some mild opiate. Generally it is better to give some

mild purgative in the beginning, and later on keep the bowels open with a mild laxative. The abdominal distention may become so uncomfortable as to require a laxative or an enema. The patient should be put on a simple liquid diet, preferably sweet milk, if it does not cause gastric disturbances; also buttermilk and albumin and other liquid foods are very good and prevent a tiring of one kind of diet. The mouth should be kept as clean as possible.

At times there are marked nasal symptoms and the condition may be improved by spraying out the nose with a cleansing solution and then with adrenalin to give better ventilation. Sometimes in children with marked rhinitis, cough, fever, and other symptoms of broncho-pneumonia, the condition may be relieved in a few hours by such treatment. The patient should be encouraged to drink water freely to eliminate toxemia. This also keeps down the fever. We feel that external hydrotherapy to reduce fever is of great value, but dangerous unless carefully used. We feel that the indiscriminate use of coal tar products is dangerous, and, if they are used at all, it should be done sparingly.

Among drugs, digitalis is being used frequently as a heart stimulant and to prevent fibrillation, and with many it is a custom to put the patient on enough digitalis to give a slight digitalization even at the beginning of the disease, and later on it can be used as necessary. To me, it seems sometimes that the digitalized patient died quicker when in extremis than the non-digitalized, but this is not the opinion of those who have had wider experience. Morphine or codeine is of great value. It may be used early for the pleural pains and later on for restlessness. Morphia should be used only in small doses and repeated often if necessary. The patient who is restless during the day and who has had restless nights wears out very quickly. During and since the influenza epidemic, we have been using adrenalin hypodermically in small doses during the fever, with the feeling that the formation of adrenalin by the body is greatly diminished by the toxemia. Osler remarks that the explosive onset of pneumonia bears a certain resemblance to the anaphylactic reaction. We have felt that adrenalin might constrict the capilliaries and prevent an extension of the pneumonia in spite of the fact that adrenalin sprayed on the bare lung showed no constrictive effect. And we have felt that adrenalin might act as astimulant even for a short time. And lastly, we have felt that the clinical results were good after the use of adrenalin. The adrenalin should not be used if it seems to give a bad effect or to cause nervousness.

Various vaccines, phylacogen, autolyzed bacteria, etc., are used intravenously and subcutaneously by the profession at large and even in some of the larger clinics. This type of treatment seems to me irrational and it merely adds more toxin to an already overburdened patient.

Pneumonia, due to the pneumoccocus, may be classified by the bacteria found into four groups. In the Rockefeller Institute the mortality rate has been greatly reduced in Group No. I by the use of Group No. I anti-pneumococcic serum. In the other groups the serum has been of little value; and it is thought best not to use serums without grouping. Some of the largest and best hospitals do not use serum at all in the treatment of pneumonia. The technique of grouping is practical only for the larger hospitals. Serum therapy seems to offer little aid for the treatment of pneumonia in the country or small towns. Especially is this true when it seems that so many of the pneumonias are of the broncho type and may not be due to the pneumoccocus at all.

The use of local applications, such as mustard plasters to the chest, is of value where there is much pain. It is also felt by relatives that such things are of value, and under such conditions it is well to use them sometimes if they do not add to the discomfort of the patient. The heavy clay plaster should not be used because it impedes the already embarrassed respiration. Generally, it is better not to use expectorants, such as the ammonia group, because they frequently do harm to the stomach.

If the patient is not doing well, it is better to have consultation, if it is possible, because the physician in charge may overlook something that the consultant may pick up: and a consultant will give moral support to the attending physician. If your patient does not improve in the usual time, or begins to run a septic temperature, every effort should be made to extend the knowledge of conditions present. This can be done by consultation, by aspirating, if thought neces-

sary, or by sending to a hospital. Bleeding may be of some value in the very full-blooded patient, or where there are signs of cardiac distention. At the Rockfeller Institute an oxygen chamber has been constructed for the pneumonia patient. In this chamber the oxygen percentage can be increased at will. After his sickness, whether it is simple influenza or simple pneumonia, we should not allow the patient to get out of bed too soon, because a longer stay in bed will help him to recuperate more quickly.

Do not overtreat your patient. Too much manipulation may be a great drawback; too much medicine is useless and may do harm in many ways; and if I may summarize the treatment of pneumonia in one sentence, it is: Study your patient carefully; keep him under the best conditions; and be ready to meet complications as they arise.

SOME PHASES IN THE TREATMENT OF PNEUMONIA.*

By G. G. HOWERY, M. D., East Radford, Va.

In the presentation of this most important subject, I shall only endeavor to call attention to some of the most vital points, which may be closely adhered to in the treatment of both lobar and bronchial pneumonia.

1st. Complete rest both physical and mental.

2nd. Plenty of fresh air.

3rd. Nutritious diet and pure water.

4th. Careful nursing.

5th. Drugs properly administered according to their several indications.

6th. Serum or specific treatment.

Rest: In considering rest we should insist upon both mental and physical rest. If the patient be an adult, we should attempt to have all business worries dismissed from his mind. Visitors should be prohibited, only those who nurse the case being allowed in the room and, if we are so fortunate as to have the services of a trained nurse, only such members of the immediate family as are necessary to soothe the patient.

If the patient is very nervous or suffering severely, he should be quieted by bromides or, if these will not produce the desired effect, a hypodermic of morphine should be given. He should be kept in a recumbent position and not allowed to arise from bed for bowel or kidney action, but the bed pan and urinal should be used.

This rest should be continued until convalescence is well established and, if the patient does well, he may be allowed a back rest after the temperature has remained normal about one week. He then should be gradually allowed to sit up in an easy chair and later to stir around.

Fresh Air: In order to insure a free circulation of pure, unheated and unbreathed air, we should attempt to find a light airy room with at least two windows, one opposite the other. The patient need not be placed immediately between these windows in the draft but this would be immaterial if the patient had sufficient bed clothing to prevent chilling. I have made it a rule to keep the room temperature between sixty and seventy degrees for the comfort of those in attendance on the patient, stressing particularly the importance of a free circulation of air in the room. If this is strictly carried out, I see no reason to insist upon a patient's being kept out of doors, especially in the cold winter months. I find this more acceptable to those in attendance to the patient and, by protecting the patient's bed by means of proper screens, a free circulation of air may be had at all times and neither cold, drafts, nor dampness will harm your patient.

Nutritious Diet and Pure Water: Water should be given abundantly either as plain water or lemonade, which will have a tendency to lessen the intoxication. When the patient is delirious, water should be given by the bowel.

The food should be nourishing and not too great in quantity. It should be given at frequent intervals and should be of a character which is easily digestible and which will not undergo fermentation in the bowels. When abdominal distention is present and of a severe character, the food should be reduced in quantity or even withheld for awhile. I consider abdominal distention a sign of one of the worst types of intoxication and it has proven as hard for me to combat as any complication I have had, resisting the most strenuous treatment.

---

*Read at the meeting of the Southwestern Virginia Medical Society, at Pulaski, May 11 and 12, 1922.

Nursing: The service of a trained nurse is a very important factor and, when at all possible, we should have a trained nurse in constant attendance, whose duties should be to look after all treatment and report to the physician any sudden delirium or rapidly occurring heart failure and, in general, to anticipate the patient's needs.

Drugs: Pneumonia was considered by Osler to be a self-limited disease; therefore it is a useless practice to promiscuously drug your patient and only such drugs should be administered as have a special indication. The bowels should be cleansed thoroughly at the onset with a dose of calomel, followed by a saline or castor oil; later a daily evacuation of the bowels may be had from an enema or some good laxative. I have seen what looked to be a beginning bronchial pneumonia in children apparently cut short by the administration of from ten to twenty grains of calomel followed in a few hours by castor oil. This will occasionally reduce the temperature to normal, inside of twenty-four hours, the lung symptoms clearing up at the same time. It is true that this type of case is most likely due to an auto-intoxication from cold and not to a true pneumonic infection.

The fever does not usually demand any special attention except in those long drawn out cases, or in a case of hyperpyrexia, a fever of from 103 to 105 degrees being well borne for a period of eight or nine days. When needed, the ice cap may be applied to the affected side, or to the head, and an alcohol rub or a tepid sponge bath will be of service. Coal tar products should never be used, owing to their depressing action on the heart.

Severe pain, violent delirium, or extreme restlessness can best be controlled by the use of a hypodermic of morphine, either with or without hyoscine, and, if this delirium occurs in an alcoholic addict, the use of moderately large doses of alcohol are permissible and usually the most effective means of controlling the patient.

The circulation should be observed very closely and prescribed for intelligently. A low blood pressure is usually significant of a severe toxemia; this will to some extent hold good with reference to the temperature. The aforesaid symptoms, with a tendency to venous congestion with extreme heart weakness, would call for the administration of digitalis, which should be pushed to its full physiological effect and then withdrawn for awhile. Digitalis is a most useful drug also in all cases of pneumonia in which you have an organic heart disease and, in conjunction with digitalis, I would not fail to mention caffeine in the form of the caffeine sodium benzoate, camphor in oil, and strychnine sulphate, all of which may be given hypodermically in an emergency, and aromatic spirits of ammonia which may be given internally and by inhalation in the treatment of the several cardiac complications of pneumonia.

It is said of strychnine that it neither raises nor lowers blood pressure nor is it a heart stimulant but, in my experience, I have found doses of from 1-40 to 1-20 grain, given every three or four hours, to make my patients rest better, pulse seem stronger, respiration easier, and distinctly improve their general condition and, unless I am thoroughly convinced that some other drug will serve me a better purpose, I expect to continue its use.

There is another type of case which, instead of having a low blood pressure, shortly after the chill reacts and has a full bounding pulse, increased blood pressure, cyanosis, and accentuation of the second pulmonic sound. Here blood letting, so much practiced by our forefathers, would be indicated, or we may make use of 1-100 to 1-50 grain of nitroglycerine, every half hour during the day, at the same time giving five or six drops veratrum viride every four hours, gradually decreasing the dose until the fourth or fifth day.

The irritating cough accompanying this disease can be treated in a number of different ways. Counter-irritation over the area involved, either by mustard plaster or mustard water, will frequently relieve the cough. Steam inhalations are very soothing and will help to take care of the sticky, viscid exudate. For this purpose compound tincture of benzoin may be used, a teaspoonful added to a quart of boiling water, letting the patient inhale the steam, which can be most conveniently administered by means of the croup kettle. If counter-irritation and steam inhalations do not relieve the cough, the use of drugs should be resorted to, those deserving special mention being chloride and carbonate of ammon-

ium and potassium citrate. These will have a tendency to relieve the sticky exudate and promote expectoration. If the cough is very harassing, small doses of the camphorated tincture of opium may be added.

Serum or Specific Treatment: The treatment of pneumonia by the use of serums. phylacogens and vaccines has so far been very unsatisfactory, according to most writers. At present, it is claimed that Cole, of the Rockefeller Institute, has put the serum treatment of pneumonia on a firmer basis: however, as yet, the methods proposed by him are too cumbersome to make his method applicable to those not having access to a well equipped hospital and laboratory in which the proper bacteriological examinations may be made.

HERNIA OF THE LIVER AND INTESTINES IN THE NEW BORN.*

By ESTILL L. CAUDILL, M. D., Narrows, Va.

As there has recently been reported in the Journal of the American Medical Association two cases of Amniotic Hernia, I wish to call attention to two unusual cases of hernia occurring in my own practice.

Case No. I.—Mrs. F. R., aged 18, American, housewife. A primipara, with no history of miscarriages. Was delivered February 21st, after a normal labor, of a baby boy weighing eight pounds. The baby was normal so far as could be determined. The umbilical cord, which appeared normal, was ligated one inch from the umbilicus. The baby was wrapped in a blanket and given to the nurse.

While attending the mother in the third stage of labor, the child suddenly began screaming, and my attention was called to the fact that "the baby's intestines had come out." Returning to the child, I found the greater part of the small intestine, the caecum, appendix, ascending and transverse colon, had escaped through an opening at the umbilicus, apparently no larger than a twenty-five cent piece. The umbilical cord had been completely divided to the point of ligation. The child was placed on its back, and an effort made to replace the intestines. After considerable work I succeeded in replacing all but one loop of the bowel, which had become very much distended. In my haste to replace this remaining loop of bowel, while trying to press it through the small opening, I unfortunately ruptured the bowel. The bowel was then pulled out and the rent in the bowel closed with a silk purse string suture. An incision about two inches long was then made above the original opening. The bowel was easily replaced into the abdominal cavity. The opening was closed with plain cat gut, including the peritoneum, fascia and skin in one layer.

An unfavorable prognosis was made to the family.

The wound healed by first intention. the temperature never went above 102. On the fourth day a dose of castor oil was given. The child made a splendid recovery and has had no trouble since.

Case No. II.—Mrs. C. P., aged 20, American, housewife. A primipara, with history of having had two miscarriages about the third month. Delivery of a boy occurred September 28th. Labor normal. The baby was well developed and normal with the exception of a large hernial protrusion from the umbilical region. The mass was the size of a large orange and very hard and extended from the umbilicus to the ensiform cartilage, the umbilical cord coming off from the lower portion of the mass. The hernia was covered with a thin glistening membrane. The anterior abdominal walls were well developed, the hernial mass being very much constricted at point of emergence from the abdominal cavity.

The child was given a general anesthetic by Dr. E. S. Carr. An incision was made through the hernial sac and the opening in the anterior abdominal wall enlarged about two inches below the umbilicus. The hernia contained nothing but the liver which was apparently very much enlarged. Reposition was very difficult as the abdominal cavity was short, the liver completely filling the cavity. The opening in the abdomen was closed with plain cat gut, the skin fascia and peritoneum being closed in one layer. The child recovered from the anesthetic but died the following day.

These cases are reported because of their rare occurrence.

*Read at the meeting of the Southwestern Virginia Medical Society in Pulaski, May 11 and 12, 1922.

SUB-MUCOUS ULCER OF THE BLADDER.

Report of Cases Treated by Excision.*

By T. J. HUGHES, M. D., Roanoke, Va.

Sub-mucous ulcer of the bladder is a rare form of infection which, as the name implies, principally involves the sub-mucosal structures. In Huner's first artcile on this subject, he gave it the title, "Rare Form of Bladder Ulcer." Other suggestive and more or less descriptive terms have been employed, such as "Elusive" and "Evasive" Ulcer of the Bladder, each indicating its difficulty of recognition and diagnosis. Keen proposed the term "Pan Mural Ulcerative Cystitis." Geraghty saw fit to term it "Paracystitis."

For the reason that the disease very slightly involves the mucosa and greatly involves the sub-mucous structures, the term sub-mucous ulcer seems quite descriptive and serves to differentiate it from that form of simple ulcers of the bladder in which the destruction is largely of the mucosa.

A search of the literature impresses us with the few cases on record of this form of bladder ulcer, and especially of the extreme rarity of its occurrence in the male. I have been unable to find but two cases recorded as occurring in the male and both of these were reported from the Mayo Clinic in a series of fifteen cases. Of the two cases reported in this paper, one was in a male and one in a female.

The etiology of the disease is somewhat in question, as is also a satisfactory explanation as to its predilection for the female bladder. Focal infection in the teeth, tonsils, and other remote parts of the body, has been advanced as the most probable source of the infection, but proof of this has not been positive. In both cases reported here, as well as the majority of those on record, the kidneys did not exhibit evidence of former disease. The kidney function was normal and the urine sterile. These facts, together with the sub-mucous involvement of the bladder wall, strengthen the contention that it is a blood-borne infection.

Since the paravesical changes with cellular infiltration and edema are most marked in the outer coats of the bladder wall, it would seem that the infection is not carried by the urine. Then the fact that the urine is sterile, in most of these cases, is further evidence that the infection must come from without the urinary tract, and this presumption is further strengthened by the fact that the surface of the bladder, in contact with the urine, is the least affected.

The prominent symptom of this disease is most agonizing and excruciating pain in the lower abdomen, particularly marked when the bladder becomes distended. This may be explained by the tension on the intra-muscular nerve fibers when the bladder is full. The fact that the pain is not characteristic of the pain of ordinary cystitis and may be referred to any part of the abdomen, according to the location of the ulcer on the bladder wall, may lead to a mistaken diagnosis of disease of other pelvic organs as will be shown in one of the cases herewith reported.

Intermittent attacks of gross haematuria, together with negative microscopic findings between the attacks of bleeding, also tend to divert one's mind from ulcerative cystitis. The severity of the symtoms is out of all proportion to the cystoscopic appearance of the bladder and the microscopic findings in the urine. The distinctive characteristics of this form of bladder ulcer then might be mentioned as follows:

1. Extreme severity of abdominal pain and bladder symptoms with negative microscopic urinary findings.
2. The history of intermittent attacks of gross haematuria.
3. The comparative insignificant appearance of the bladder mucosa as observed through the cystoscope.
4. The long standing of these cases, the first symptoms dating back a number of years.
5. The history of some remote focus of infection—teeth, tonsils, etc.

The following cases have been treated at the Shenandoah Hospital.

Mr. B—., age 38, admitted to the hospital for examination June 15, 1919. He gave a

*Read before the Southwestern Virginia Medical Society at Pulaski, May 11 and 12, 1922.

history of severe abdominal pain with vesical tenesmus on urinating, for the past seven years. Treatment under several competent physicians had failed to give any relief. He had been unable to work for several years. Blood examination negative, urine negative except for a few W. B. C., prostate not enlarged. He was referred to an urologist for cystoscopic examination. No definite pathological lesion being found except hyperemia or mild cystitis, he was given bladder irrigations of nitrate silver solution, together with internal administration of urinary antiseptics, and allowed to return home to continue treatment. He received temporary improvement while pursuing the treatment, but returned to the hospital on June 26th, 1921, competely broken down physically from pain and loss of rest and sleep.

I referred him to Dr. S. B. Cary for urological examination. Dr. Cary made a diagnosis of sub-mucous, or evasive, ulcer of the bladder and sent him back to me for operation. Through a suprapubic incision under local anesthesia, the bladder was opened and the ulcer excised. The bladder was closed and the prevesical space drained for thirty-six hours. A permanent catheter was left in the urethra for five days. He was given a back rest on the third day, a chair on the sixth day, and left the hospital on the eleventh day. He was promptly relieved of the distressing bladder symptoms and made an uneventful recovery. He had badly decayed teeth with pyorrhea.

The other case is that of a female and was operated by my friend, Dr. L. G. Richards. The diagnosis of sub-mucous ulcer was made by Dr. Cary, through whose courtesy I obtained the following history.

Terrific abdominal pain for the past ten years, most of which time was spent in bed. Six of seven abdominal operations had been done from time to time by almost as many surgeons, until all of her pelvic organs had been removed (except the bladder) with no relief of her complaint. She had become a morphine habitue through the necessity to give relief at times. She gave history of having had quinsy, tonsillitis, pyorrhea, and decayed teeth; tonsils and teeth had been removed.

Through a suprapubic incision, the bladder ulcer was excised last January with most gratifying relief.

In both of these cases the urine was sterile and the blood-Wassermann negative. Microscopical examination of the ulcers showed edema and infiltration of the outer layers of the bladder wall, and the most logical inference one could draw as to the etiology in both of these cases is that the infection was blood-borne and came either from the teeth or tonsils, or both.

TREATMENT OF DIPHTHERIA.*

By T. K. McKEE, M. D., Saltville, Va.

Since I began the practice of medicine in 1897, the treatment of diphtheria has been completely revolutionized. I still retain a vivid memory of my feeling of incompetency when called to treat this dread disease. In those days we went forth to meet the enemy armed with various gargles, sprays, vaporizing treatments, local applications, etc. The death rate under the old regime was appalling. So far as our methods of treatment were concerned, all were equally valueless. Under good care the mild and moderate cases recovered; the severe cases died regardless of treatment. All the old remedies are forgotten and fortunately are no longer needed.

We knew that true diphtheria was caused by the Klebs-Loeffler bacillus, but the discovery of antitoxin by Behring and Roux was in an experimental stage, and up to that time had been confined to experiments on animals. I am sure the older members of the profession will recall how anxiously we looked forward to the treatment of human beings with this serum. When it proved a success, it was heralded throughout the world as the greatest discovery of the age. Like all new discoveries, it was looked upon by many as an experiment, and left for the bolder members of the profession to try out. Many stood by the old remedies and only turned to antitoxin as a last resort. Consequently, it was frequently given too late and the patient died. The fatal termination was usually charged up to the remedy and in many instances it fell into dis-

*Read at the meeting of the Southwestern Virginia Medical Society, at Pulaski, May 11 and 12, 1922.

repute. I have a neighboring physician who administered antitoxin to three consecutive patients, all of whom died. He has never given another dose and has frequently retired from cases when the family insisted that it be given. The fact, that it was given in small doses and late in the disease proved a great handicap to its success. When we first began to use antitoxin, two thousand units was considered a full dose and this was not given until we had extensive membrane. We wonder now how we accomplished so much with so little. The laity soon had the idea that it either killed or cured. I have frequently had to exhaust all of my persuasive powers to obtain the consent of parents to its use.

In spite of the fact that antitoxin is a specific, we still have a mortality that is too high. This, in some instances, is due to the parents who fail to realize the danger that may arise from a sore throat or a croupy voice, and do not call the physician until late in the disease. A child suffering from diphtheria must be looked upon as poisoned. Antitoxin is the antidote and every case must receive enough of the antidote to neutralize the poison. Whether enough antidote will be supplied depends upon the duration of the infection when seen by the physician, and the proper application of the remedy. If we make a mistake here, let it be on the safe side. We know, that a large dose is perfectly safe and that a small dose may be insufficient. Antitoxin bears the same relation to diphtheria that water bears to fire, —the quicker the water is turned on the blaze, the more readily is the fire extinguished. If delayed too long, no amount of water will save the building. If antitoxin is too long delayed any quantity given may be of no avail.

Case.—In 1907 I was called to see a twelve year old boy who had taken sick the previous night. Temperature was 102, tonsils swollen and red, but no membrane. This patient lived several miles in the country and the time was before Henry Ford's fondest dream had been realized. I requested his mother to watch his throat and call me if he did not improve. One week later I was called and found him with an advanced case of diphtheria. Thirty-five thousand units of antitoxin administered in the next thirty-six hours had absolutely no effect. The alarm was turned in too late. This taught me a lesson that I have never forgotten. Unless confident I have some one upon whom I can rely, I never dismiss a sore throat until I have made a positive diagnosis.

In many cases, at the beginning of the disease when the tonsils alone are involved, it is impossible without the aid of the laboratory to differentiate diphtheria from tonsillitis. We frequently see cases that require two or three days to make a positive clinical diagnosis. Especially is this true in follicular tonsillitis, for in this condition more than in any other form of the disease we must be careful regarding a positive opinion. There are follicular forms of diphtheria involving the lacunae of the tonsils, which clinically so resemble diphtheria that even an expert cannot differentiate them. In such cases, the city physician, having access to a laboratory, has a decided advantage over the country doctor. When a positive diagnosis cannot be made, the only safe rule to follow is to administer antitoxin. In several instances I have given antitoxin and felt afterwards that it was not a case of true diphtheria, but have never seen any unfavorable results from its use.

Laryngeal diphtheria is the most distressing and alarming type of the disease we are called upon to treat. This form may develop secondarily after two or three days of the illness, or it may be the first manifestation of the infection. When a child, ill with tonsillar diphtheria develops a hoarse or croupy voice with or without impeded respiration, the larynx is almost invariably involved. The family should always be advised of the importance of such development and instructed to call a physician at once. Even though the throat may show little evidence of diphtheria, if the above symptoms appear, it is wise to administer antitoxin. If these cases can be reached early and treated heroically, most of them can be relieved without the necessity of intubation. Antitoxin should be given in large doses and repeated at frequent intervals. No case of diphtheria should receive less than five thousand units. In the laryngeal type not less than fifteen to twenty thousand units should be given in any case, regardless of age. Since adopting this method I have not found it necessary to intubate in any case except when called late in the disease. I have recently treated two severe cases successfully in this manner.

Case No. 1.—A child eighteen months of age, sick twenty-four hours, found suffering from severe dyspnoea and paroxysms of cyanosis. Gave fifteen thousand units of antitoxin, followed in eight hours with ten thousand, and in twelve hours with ten thousand, thirty-five thousand units given in twenty hours; patient made a good recovery.

Case No. 2.—A boy seven years of age had been croupy for the past thirty-six hours. Found him suffering from difficult breathing, partial cyanosis, with slight membrane on the tonsils. Gave twenty thousand units of antitoxin, followed in eight hours by twenty thousand, and in twelve hours by twenty thousand, sixty thousand units in twenty hours; good recovery.

I feel confident that, but for the large and repeated doses, both of these would have been intubation cases. It has been well established that large doses of antitoxin are perfectly safe. It has been given in sixty thousand unit doses intravenously with splendid results.

In advanced cases with laryngeal stenosis, a fatal termination can frequently be prevented by intubation. Just when to intubate is sometimes a puzzling question, but here, as in the administration of antitoxin, it is better too early than too late. When the patient begins to show such danger signals as extreme restlessness, sweating, difficult breathing, and cyanosis, it is usually time for interference. Every general practitioner should be able to do an intubation, but unfortunately few can do it successfully. I want to say, however, that the most skillful man I know in this line is a plain country doctor. He does the work quickly, skillfully, and most successfully. As soon as the patient begins to breathe better, and he is sure the tube is clear, he removes the thread from the tube. If a tube is left with thread attached and anchored behind the ear, or with adhesive, it is a constant source of irritation, and is frequently the cause of the tube being dislodged.

There is a very interesting article in the Journal of the American Medical Association of Arpil 22, 1922, by Dr. Chas. A. Thompson of the Willard Parker Hospital, New York, entitled "The Removal of Diphtheritic Exudate from the Larynx." For this purpose he uses a straight applicator with a screw clasp on the tip to which a piece of gauze is firmly attached to prevent its being lost in the larynx. The withdrawal of the swab acts like the plunger in a syringe, bringing out mucus and pieces of membrane, and in some instances the whole cast has been removed. In fifty-seven cases thus treated, thirty-three did not have to be intubated. This requires a skillful operator, and is probably as difficult as intubation, but is worthy of our consideration.

Tracheotomy still has its advocates. I shall leave this mode of treatment with you for discussion, as I have never had a tracheotomy done, always preferring intubation.

It is important to remember that no form of diphtheria is more fatal than the nasal variety. It is essential that the nose be examined on each visit to a patient suffering from any form of the disease. If you find a serous or bloody discharge, you may suspect involvement of the nose. The membrane in these cases is frequently very extensive and requires large doses of antitoxin. In such cases, a few drops of some oily preparation dropped into the nose with a medicine dropper, or the use of an oily spray, will add greatly to the comfort of the patient. We should bear in mind that forcible irrigation of the nose should always be avoided as infectious matter may be forced into the eustachian tube, causing secondary otitis.

The nutrition of the patient is most important. As a rule, the food is poorly taken because of the pain caused by swallowing. In as much as small quantities are taken at one time, it should be given in as concentrated form as possible. Milk, fruit juices and cereal gruels are usually best taken. In bottle fed children, food given from a spoon is taken better, because of the discomfort caused by drawing on a nipple.

When the heart becomes weak, irregular, or intermittent, stimulation will be necessary. For this purpose three drugs are of signal value, strychnine, tincture of strophanthus, and alcohol. Since prohibition has cut out the latter, we rely on the other two, of which strychnine is probably preferable. No case of diphtheria should be considered to have run its course until the heart's action is normal, and the general condition good. Sudden death may come from over exciting a damaged or weakened heart, if proper caution is not

used. I recall a neglected case in which the membranes disappeared after two large doses of antitoxin. The patient was pale, with small pulse, and general weakness. Heart stimulant was given, with instructions to keep him perfectly quiet, and in bed. Three days later he was allowed to walk about the room. He lived only a few minutes after returning to his bed.

Broncho-pneumonia, especially in laryngeal cases, is a rather frequent complication and adds greatly to the gravity of the disease.

As soon as the diagnosis of diphtheria is made, the patient should be isolated, the family quarantined, and all children in the household immunized by a small dose of antitoxin. The specialist has rendered us a signal service in the removal of many diseased tonsils and adenoids. Diphtheria is rare in a child with a healthy throat and nose and, when it does occur, it is more amenable to treatment.

Now comes the assurance, on seemingly good authority, that diphtheria can be wiped out. This statement sounds strange to those of us who recall that a few years ago this disease was the most dreaded and fatal of all children's diseases. Before antitoxin was discovered, five out of every ten who contracted diphtheria died. To-day, with the general use of antitoxin, nine out of every ten get well Even with this improvement, over twenty-seven thousand people in New York State took the disease during 1921, and seventeen hundred died from it. Most of these children were under five years of age. It is now claimed that every one of these cases and deaths could have been prevented by the use of toxin antitoxin. This mixture is different from antitoxin used to cure diphtheria, which only protects the child for about three weeks. It is claimed that toxin antitoxin protects for years, and probably for life. Toxin antitoxin protection is obtained by the injection of a small amount of sterile serum into the arm once a week for three weeks. This is said to make the child as safe from diphtheria, as vaccination does from smallpox. Then, if every child between six months and five years of age should receive this treatment, diphtheria will eventually be wiped out. If this be true, a new and brighter day is beginning to dawn.

If this paper serves to impress upon you the importance of a closer observation of all cases of sore throat, the early administration of antitoxin in suspicious, as well as true cases of diphtheria, and the use of large and frequently repeated doses in the laryngeal and nasal forms, I shall feel that my efforts have been amply rewarded.

SOME REMARKS ON TECHNIQUE IN MIXING AND ADMINISTERING SALVARSAN.*

By JOHN J. GIESEN, M. D., Radford, Va.
Physician, St. Albans Sanatorium.

At almost every medical meeting, there is a paper or papers read on syphilis, which always brings forth a wealth of discussion. This disease is a popular subject with the profession principally by reason of the fact that the definite standards of therapy for it are constantly changing. However, this paper is not intended to discuss syphilis and it is not intended to discuss the therapeutic value of salvarsan. Long before Ehrlich introduced his "606" preparation, medical science recognized the value of arsenic as a treponemicide but knew no method of procedure wherby sufficiently large doses could be administered into the human economy and tolerated to act as such. Since the introduction of "606" and the demonstration of the fact that it could be safely administered intravenously, we have had at our command a remedy, which when properly used in conjunction with the "sheet-anchor," mercury, enables us ordinarily to satisfactorily and efficiently combat this disease.

Arsphenamine is now the official designation of the drug under discussion and it has been manufactured, since the war, in this country by several laboratories, under United States Public Health license. Salvarsan, or "606", is now the trade name for the arsphenamine prepared by one of these laboratories. However, the drug having been introduced and used for years under the name salvarsan, it is almost universally known by that name, and, for the purpose of clarity, the term "salvarsan" will be used in this paper and should be taken to mean any of the arsenical compounds known as arsphenamine, manufactured under Public Health Service license, all of which, in

*Read at the meeting of the Southwestern Virginia Medical Society in Pulaski, May 11 and 12, 1922.

my experience, are equal in therapeutic efficiency. Neo-salvarsan or neo-arsphenamine, while requiring a much less elaborate technique for preparation of the finished solution, admittedly does not equal salvarsan in therapeutic efficiency, for which reason it is not extensively used.

The treatment of syphilis with salvarsan, which is the principal use of the drug in this country, requires a technique more or less elaborate, essentially simple, yet fraught with danger both to patient and physician, if not properly prepared and administered. A few years ago, very few physicians administered the drug; some were afraid of it, some did not believe in it, others felt that the technique was so elaborate as to necessitate its administration by the specialist. Now, the majority of the profession can and do administer it, but with a variety of technique and with varying results and reactions. Very few patients receiving intravenous injections of this drug are entirely free from more or less severe reactions following its administration, ranging from slight nausea, through chills and fever, to severe shock (the Herxheimer reaction, so-called). The writer knows a number of individuals, syphilitics, who have received one or more salvarsan administrations at the hands of physicians, some of them experienced and some inexperienced in the use of the drug, and which patients have suffered so severely from reactions that they have refused to be treated further with it. He knows several patients who have suffered with slight to extensive "sloughs" following accidental leakage of the drug solution into the tissues, in one case the whole biceps muscle being involved. It is the belief of the writer that salvarsan can be administered without reaction and without discomfort or any danger to the patient. He believes that the various reactions, etc., obtained by many men and considered inevitable, are due to one, more, or all of the following errors in technique: (1) improper dosage; (2) improper mixing; (3) improper preparation and after-care of the patient; and, (4) improper administration.

Immediately before, during and after the late war, the writer, working with several of the syphilographers in Baltimore City, assisted in elaborating a method of procedure, which he believes eliminates these errors and which has given the writer excellent results in a series of 350 dispensary administrations in Baltimore City and 225 administrations at Saint Albans Sanatorium, to private patients, in the past three years. In these 525 cases, of which a record has been kept, there have been only a very few slight reactions, amounting to nausea; no moderately severe ones; and one severe one, with chills, shock and temperature elevation. The one severe reaction occurred in a patient who formerly suffered with amebic dysentery and was apparently cured, subsequently contracting syphilis. Following the first administration of salvarsan, there occurred apparently an exacerbation of the dysentery; there was severe shock, chills, high fever, rapid pulse, prostration and diarrhea. Appropriate therapeutic measures were instituted and the dysentery controlled, after which he was then given a four weeks' course of mercury, followed later by eight more salvarsan administrations, without a further semblance of reaction.

The technique or procedure referred to, which is the basis for this paper, can be classified in three groups and will be explained in that order, viz:

I. Mixing the drug.

II. Administering the drug.

III. Preparation and after-care of the patient.

I. Mixing the Drug.

1. *Selection of brand.* As herein before stated, any of the brands of arsphenamine manufactured under Public Health Service license are equally efficient and supposedly non-toxic. Some require cold and some warm solutions in preparation and dilution. We have used all of them and have no particular preference. Just as in the choice of the digitalis tinctures, however, it is well for one individual to become accustomed to one particular brand and to continue to use it in his work. Silver-salvarsan is a new preparation of the arsenical compounds put out by the Metz Laboratories. It is claimed by the manufacturers that it causes a more rapid disappearance of the lesions of syphilis than does the sodium salt. It has the further advantage that it requires no alkalinization. However, our experience is that it is highly toxic in some cases and, when used, its effects

should be carefully watched. We have noted several patients treated with it whose skin exhibited a dusky appearance, suggesting deposits of silver salts in the subcutaneous tissues. Inasmuch as its specific action on syphilis, particularly its influence on the Wassermann reaction, is no more marked than the better known compounds, we have declined to use it further at this time.

2. *Selection of dosage.* This is a matter entirely within the judgment of the physician and depends more or less upon the individual patient. Lesions of the heart or kidneys, syphilitic eye complications and long-standing infection indicate small dosage. Age, sex and body weight are also determining factors. The use of small doses, in all cases, frequently repeated, is much more preferable than larger less frequent doses. In our experience, doses larger than 0.4 grammes are unwarranted, except in a very few cases and, in every instance, the initial dose should be small and cautiously increased.

3. *Sterility.* Everything coming into contact with the drug, apparatus, solutions, hands, etc., should be surgically clean. All apparatus should be boiled in water to which has been added a few cubic centimeters of hydrochloric acid, which will prevent coating of the vessels and containers with lime salts. The diluting solutions should be absolutely sterile. The operator should scrub hands for five minutes with soap and water, followed by five minutes' immersion in 1:5000 bichloride solution and then rinse in fifty per cent. ethyl alcohol. We do not wear gloves except for our own protection in cases showing skin lesions. We personally know several specialists, who scoff at the idea of rigid surgical cleanliness in administering salvarsan, claiming that it is impossible to contaminate such a bactericidal solution; we further know that these men have patients who frequently exhibit chills after administration of the drug, which may be because living bacteria are thrown into the blood stream. We observe sterility carefully and our patients do not have chills. The ampule containing the drug salt should be immersed in a bowl of seventy per cent. ethyl alcohol to insure sterility of the outside and to further insure against contamination of the operator's hands when he opens the ampule. If there should be a crack in the ampule, which renders the contents unfit for use, this immersion will make it more readily noticeable.

4. *Alkalinity or Neutralization.* This is one of the most essential procedures in mixing salvarsan; improper alkalinization probably causes more reactions than any other one error. Our method is not the one recommended by the manufacturers of the drug and differs essentially in several ways. Pure sodium hydroxide is necessary. We use a solution of four times the normal and have it made up by a reliable pharmaceutical house and specify that it be stored in a bottle which has previously contained such a solution and that a rubber stopper be used. This solution, if carefully prepared from a chemically pure drug and pure distilled water, is perfectly clear, colorless and free from any sediment. If it becomes cloudy, dark or shows sediment, it should be discarded. The average drug store is unable to supply the proper solution. We secured this solution from Hynson, Wescott & Dunning, Baltimore, and have always found it to measure up to the standard specified. It has been determined by trituration with indicators that 0.26+ c.c. of four normal sodium hydroxide solution will exactly neutralize 0.1 gramme of salvarsan: therefore, 0.52+ c.c. will neutralize 0.2 grammes; 0.8 c.c. will neutralize 0.3 grammes, and proportionately for the larger doses. Our method of neutralization consists of emptying the contents of the ampule into a small, sterile, dry glass and adding all at once the entire amount, carefully measured, of the sodium hydroxide solution necessary to neutralize that particular dose of salvarsan. Note that this is done before any diluting solutions are added. The drug salt and the alkaline solution are intimately mixed and stirred with a glass rod and in a few moments a clear, bright yellow solution results. In cases where, as rarely happens, not enough of the alkaline solution is added to completely neutralize the drug, there will not be complete solution. In short, if complete solution is obtained between the salvarsan salt and the sodium hydroxide, neutralization is assured. Normal salt solution, or distilled water, as preferred, is then added to the desired dilution.

5. *Dilution.* The drug must be diluted before administration with normal salt solution or distilled water. Principally for purposes of convenience, we use normal salt solution exclusively. Distilled water, ordinarily, is just as good. Most authorities recommend not less than 20 c.c. of solution for each 0.1 gramme of the drug. We ordinarily use not less than 30 c.c. of solution for each 0.1 gramme of drug and believe that it should never be administered more concentrated than that. We find that the more dilute solutions are less irritating to the veins and that the greater bulk is just as readily taken care of by the blood stream and it spares the kidneys. The method of administering a dose of salvarsan in 5 or 10 c.c. of solution, advocated several years ago, is only mentioned to be condemned as very unpractical and unsafe. Our method of preparing the salt solution we use is to make it from freshly distilled water and chemically pure sodium chloride, boiled for 30 minutes, on three successive days. The solution will keep indefinitely. Distilled water, if used as the diluent, must be freshly prepared and carfully sterilized. The diluting solution should be either hot or cold according to the brand of drug used.

6. *Filtration.* The solution to be administered should be absolutely clear and free from particles of any sort. Thorough filtration alone can assure this. We invariably filter our solutions, after mixing and diluting, through coarse filter paper, which has been sterilized in the autoclave, just as gauze and linens are sterilized. We believe that the method of filtering through cloth, as commonly employed, is unsafe.

II. Administration of the Drug.

1. *Method.* The gravity method is used by us exclusively and has much to commend it, as will be explained. The bottle is suspended about four feet above the point of needle, which will give enough but not too great pressure. If the patient has large veins and a large needle is used, it is wise to lower the bottle to three or two and one-half feet.

2. *Apparatus.* We use apparatus which is not used for any other purpose. Everything is of glass except the hose and the needle. We use the ordinary gravity bottle, or cylinder, connected to four feet of one-quarter inch rubber hose (pure gum), which is soft and flexible and which contains several "windows." A Kaufman-Luer syringe is used. This is essentially a Luer syringe, on which at right angles is connected a short glass spout one-quarter inch from the middle neck of the syringe. The rubber tubing is connected to this spout and terminates at the other end in a glass connecting tube which joins the hose leading to the glass gravity bottle. A Luer slip large gauge needle is attached to the syringe; its bore may be adapted to the particular vein.

3. *Procedure.* The apparatus is first washed out with salt solution or distilled water and then filled with normal salt solution, after first expelling all air from the circuit, to just above the union of the hose and gravity bottle. The salvarsan solution is then poured in. If, on puncture of the vein and starting the flow, there is leakage of solution into the tissues, there being a few c.c. of salt solution in advance of the salvarsan solution, the flow can be stopped before any damage has been done by infiltrating the tissues with the drug. The needle is attached to the syringe and the subsequent manipulation is that of a Luer hypodermic syringe. The vein is punctured and when the plunger is pulled out gently, blood fills that part of the syringe in front of the glass tube at the side of the syringe, if the vein is properly entered; as soon as blood appears, filling the syringe, the plunger is pulled out further and at once the salvarsan solution enters by the side tube by gravity, driving the blood back into the vein, so that in a few moments the syringe becomes filled with salvarsan solution. The injection may be stopped at any time by forcing the plunger back, thus shutting off the side inlet. There is no danger of air entering the vein, for with this apparatus there is always a closed circuit. The Kaufman-Luer apparatus has several other advantages. The operator has perfect control of the flow, which is plainly in sight; there is no soiling whatever of the field by blood; asepsis is assured, for the needle need not be handled after sterilization, as it is manipulated and controlled by the syringe; avoidance of clot formation in the needle, for as soon as the vein is penetrated, the solution flows in almost automatically.

4. *Selection of Vein.* The median basilic or median cephalic are the veins of choice. Other veins of the forearm can be and frequently are utilized. In infants and young children, administration is sometimes made into the longitudinal sinus or into the jugulars.

5. *Puncture of the Vein.* This is ordinarily easy after a little practice. A tourniquet should be used; the patient should make a "fist"; the vein should be steadied by traction below the point of puncture; the needle inserted obliquely and in the direction of the venous stream. A few sharp slaps over the vein will often cause it to stand out prominently. Sometimes, in corpulent individuals particularily, the veins are deep and difficult to puncture. In others, who have had previous injections of salvarsan or other drugs, the veins are sometimes so-called "dried-up," or indurated, and are unfit for use. Proper technique will preserve the veins indefinitely, although repeated puncture of the same vein too frequently causes induration.

6. *Sterility of the Field.* Ordinarily, pure ethyl alcohol liberally applied over the field will suffice. Iodine is not essential and has other disadvantages.

7. *Rate of Flow.* It should be slow, the slower the better. We usually average between ten and fifteen minutes for the average injection. In some cases where the veins are small and a small needle is used, as long as thirty to forty-five minutes are required.

8. *Preserving the Veins.* We follow up the salvarsan solution with normal salt solution, using the following method; we have 100 c.c. of filtered salt solution ready and, just as the salvarsan solution is disappearing from the gravity bottle, have an assistant pour the saline into the bottle and allow most of it to follow the salvarsan into the vein. This has two advantages: it utilizes the salvarsan which remains in the hose and washes all of the salvarsan out of the local vein into the general circulation, thus preventing any local induration, which, when it occurs, renders the vein unfit for further intravenous medication.

III. Preparation and After Care of the Patient.

1. *Time.* We always administer the drug, when possible, in the early morning. However, the time of the day is more or less arbitrary. We believe that small frequent doses are preferable to larger, less frequent doses.

2. The patient is given a purgative the night before and is instructed to abstain from all food on the morning of administration. In the average case, the patient may eat a light lunch following the injection. We find that it is more essential to have the stomach empty when the drug is administered than it is to keep it empty afterward.

3. We put the patient to bed, administer the drug and then keep him in bed for at least several hours afterward. Cases which have shown a tendency on previous injection to reaction, we keep in longer. We inhibit undue exercise for twenty-four hours afterward.

4. For reactions of the mild type, when they occur, rest in bed, quiet and a dark room seem to do as much good as anything we have tried. In severe reactions, where there is shock, the usual measures should be instituted as against shock; adrenalin, hypodermically, works like magic in some cases. Slight or severe chills respond well to heat externally and hot drinks.

Recently, a preparation has been put on the market consisting of salvarsan solution, neutralized and diluted, sealed in vacuum ampule and ready for introduction into the vein. This preparation enables the average physician to administer the drug in his office without apparatus and without a working knowledge of the technique of preparing the drug. In our personal experience, this preparation decomposes rapidly and a larger number of patients suffer reactions from it than from carefully prepared freshly mixed solutions. It would appear that solutions of salvarsan, when neutralized, decompose or oxidize either in vacuum or when exposed to the air. The manufacturers of this preparation admit as much and warn on the label against administering the preparation should it show a certain shade of color, indicating decomposition. We have never seen an ampule of this preparation, even those fresh from the laboratory, which showed the brilliant yellow color of a freshly and properly prepared salvarsan solution. Where a physi-

cian is unfamiliar with the technique of mixing the drug and wants to administer it himself, we feel that it is vastly better for him to use this prepared solution, after satisfying himself that it has not decomposed, in preference to attempting to mix a solution with improper technique.

We feel that we have simply "hashed over" a number of facts and figures with which all of you are more or less familar and which those of you who administer salvarsan all probably use. The technique is brought to your attention in the hope that it will offer a point here and there which will be of some interest and of some help in avoiding reactions usually seen in patients receiving the drug.

From our experience with this drug, based on the statements enumerated herein, the following conclusion is drawn:

That, careful sterility; careful neutralization or alkalinization; careful filtration; proper dosage at proper intervals; proper dilution; careful administration; proper preparation and after-care of the patient, all combine to avoid unpleasant reactions and sometimes dangerous ones after salvarsan administration.

EMPYEMA OF THE MAXILLARY SINUSES, SECONDARY TO EXTRACTION OF TEETH.*

By ARTHUR HOOKS, M. D., Bristol, Va.-Tenn.

The number of cases under my observation for the last few months is my main reason for attempting to prepare a short paper on this important subject—important from the standpoint of the general health of all patients suffering with empyema of the maxillary sinus, who are carrying with them, over periods of months and years, fistulas through the alveolar process.

It seems very unfortunate that dentists so often drill into the antrum in cases of abscessed teeth, even when the wall of the antrum is intact; and in cases where the dental roots lie within the antrum, the tooth is extracted and the opening made larger, which establishes an avenue of infection from the mouth, through the fistula thus produced. The point I wish to emphasize is that dentists are attempting treatment of quite a large per cent. of these cases where a fistula is made through the extraction of the teeth, enlarging and irrigating through the fistula's opening instead of referring these cases to a competent rhinologist when first seen and thereby avoiding much suffering and many complications. The variation in thickness of the alveolar process, and the fact that drainage occurs in the mouth, together with the probability of re-infection from the mouth, are the serious objections to this method of treatment. Then, too, even though he does not attempt to cure the sinus, he only leaves a permanent fistula opening into the mouth which, without operation to close it, is fraught with much danger to the patient.

Anatomical variations are important because of the possibility of error in entering the sinuses. Should the facial wall be unusually flat or receding, entrance through the alveolar route would result in opening into the canine fossa; or, if the nasal wall were curved toward the antrum, the nasal floor would be reached by the alveolar operation. Therefore, it is very necessary to have an X-ray made of all such cases before an opening is made into the maxillary antrum through this route, in order to discover any anatomical variations and help to detect any diseased condition that might exist.

However, the expense of this procedure is often objected to, and refused, in which event I am guided by the physical signs. One could wish in such cases to obtain more definite information as to the character of infection by aspiration and subsequent bacteriological examination, and here again, the time necessary for it, and the expense is often objected to. Therefore, we often have to attempt a cure without these valuable aids in diagnosis.

The alveoli of some teeth, especially of the roots of the second bicuspid and the first molar, in the event of disease at the roots of these teeth, offer a route for entering the antrum by means of a drill, which should always be kept in mind when these teeth are being extracted, as the antrum is liable to be infected in this way.

The methods of infection of the antrum of Highmore secondary to the extraction of teeth that have penetrated the antrum have, it

*Read before the Southwestern Virginia Medical Society at its meeting in Pulaski, May 11 and 12, 1922.

seems to me, been divided by Dr. Harold Lyon, of Rochester, in a most practical way into three groups.

1st. Dental roots lying within the antrum, which, by their extraction, establish an avenue of infection from the mouth through the fistula thus produced. This condition is comparatively rare and, of course, unavoidable. It is far more rare than one would judge from reading a series of X-ray. The angle at which the rays strike the teeth and the shadow which is cast often indicate that a root is projecting into the antrum, but this is due to the angle at which the picture is taken. The infrequency with which roots are found projecting into an antrum, in radical external operations for chronic empyema, even in the hands of the most careful observers, bears out this fact.

2nd. The few cases in which the root extends to, and not through, the periosteum and mucous membrance of the antrum. After the extraction of the root, the soft tissues become infected and suppurate and a probe, inserted for diagnostic purposes, may accidentally penetrate into the cavity of the antrum. This, however, is rather infrequent.

3rd. Cases in which the wall and lining of the antrum are penetrated in the extraction of the teeth. In this group is classified the largest number of patients. The penetration occurs, first, as a result of the rocking movement of extraction, which tears into the antrum at the point immediately above and in contact with the root, and, secondly, on account of failure to extract all of the root, and, in attempting to place forceps around the remaining fragment, pressure is made for the purpose of pushing aside the soft parts, thus dislocating the root upward and penetrating the antrum. The condition is also commonly found following the older method of simple extraction, in contradistinction to the newer methods in which the soft parts are incised and the tooth lifted from its socket. As a matter of record, it was observed that the greater number of the patients in this group had had simple extraction of teeth, instead of modified open operation.

Fistulas.

Empyema and fistulas do not result in all cases in which roots extend into the antrum. for two reasons: the soft parts fall together in close proximity and heal by primary union, or the parts may be sutured together. If the passage between the mouth and the antrum closes unaided, or is closed by suture so that a dead space does not form in the soft parts, a fistula seldom occurs. The fact that food is continually forced into such an opening retards the immediate healing of the wound, because the particles work in between the line of union and force the edges apart mechanically.

The tendency of fistulous tracts is to close early; but, if they are allowed to remain open, or are kept open by packing, with rubber tubes, and so forth, they become lined by epithelium, and a permanent fistula, which cannot be eliminated by simple curettement, is the result. It is, therefore, an important surgical principle to use measures early which will aid in closing the tract.

In some cases the fistula may close by primary union, without aid or by suture, but an empyema of the antrum develops which pathologically is a small cell infiltration of the periosteum and mucosa, with a serous discharge. This latter becomes purulent, the mucosa becomes edematous, and the ordinary cycle of an inflammatory process results. The only difference (but an important one when treatment is considered) between an ordinary inflammatory process and an inflammation of the mucosa of the antrum is the fact that the epithelium of the latter is ciliated, and the active motion of these cilia is toward the normal ostium. Again, an important point is the fact that a fistula resulting from the extraction of a tooth is located at the lowest point of the antrum, and is, therefore, the easiest avenue for drainage from the antrum. This works against early closure of the opening because the drainage of the antrum is accomplished by gravity through it.

Treatment and Results.

Two general principles of empyema of the antrum have been mentioned, namely, drainage of the cavity at its most dependent part by the fistula, and the active motion of the cilia lining the antrum toward the median line. With these as basic principles, the exact treatment depends on the duration of the infection, its previous treatment, and the amount of alveolar necrosis.

In acute cases, the majority of antrum infections secondary to a dental root extraction will clear up with a modified Krause window resection in the inferior meatus, and suction and occasional lavage through this opening. The fistula, if small and slit-like, should be curetted gently; if large, it should be curetted gently and closed by sutures. Too active and too frequent lavage should be avoided, since suction will remove all fluid from the antrum. If lavage is used daily, it may water-log the membrane. The motion of the cilia tends to produce drainage through the nose. The kind of fluid used in lavage seems not to be important because its chief effect is simply the meechanical cleansing of the cavity and the stimulation of the membrane, which produces temporarily a somewhat richer blood supply.

In subacute cases, the same principles of treatment are carried out. The chief difference between the subacute and the acute cases is that infection of the antrum is of longer duration; the fistulous tract probably has become lined with epithelium, and therefore will not close by simple means. Lavage may be used more often than in acute cases, and the modified Krause resection should be made large and as low as possible. The fistula should be thoroughly curetted in order to give it an opportunity to close. A surprising number of subacute cases clear up by these simple measures. If the fistula does not close, three measures are available. (1) simple suture of the opening after excising the lining of the tract;(2) a radical plastic operation; and (3) the use of a temporary denture, if the tract is very small.

In the plastic closure, the operation may consist simply of trimming the edges for a short distance in all directions, curetting any underlying necrosed bone, and closing by sutures over soft sterile rubber tubing to prevent the suture from cutting. If the tract is large, a more radical plastic operation may be necessary. Since in such a case the soft tissue over the hard palate is available, an incision near the middle line of the hard palate will allow that entire side to be elevated and brought over the fistulous opening, which has been excised and curetted. Closure may be made as described. A denture is made in acute and subacute cases in an attempt to keep the food particles out of the fistula. The denture is fitted as perfectly as possible, and should be removable so that it may be kept clean. It is attached to the teeth on each side of the opening and, of course, is not made with a projection into the fistula. As a rule, such a denture is difficult to make because, if food and liquids escape into the area of the fistula, its purpose is not accomplished.

In chronic cases, the same procedure is carried out. These cases are characterized by the presence of chronic infection of the antrum, and the epithelium-lined fistulous tract. Here, again, by relatively simple means, the antrum often clears up rapidly and the fistula closes. It is, therefore, advisable to employ the conservative measures for some time before attempting the more radical.

In protracted cases in which treatment is resisted, a radical external operation on the antrum, with excision of the fistulous tract and radical plastic closure, may be necessary.

In all of the cases studied, with eight exceptions, the condition cleared up by simple means. A radical plastic closure of the fistula was necessary in four cases; a Denker operation was required in one; dentures were used to keep food from the tract in two: and the condition rapidly cleared after an adjacent infected tooth had been extracted and the alveolar necrosis curetted in one. The rubber tubes sutured into the antrum through the fistulas were, of course, removed; in one case a long strip of gauze was also removed.

The average course of treatment in the clinic was twenty-six days; the shortest was four days, and the longest three months and ten days. The ulimate result, that is, if the antrum remained clear, or if the fistula remained closed, was judged from the answers to the questionnaires, which showed that the fistula is patent in eight of the patients. On first thought this might appear to be a high percentage of failures; but, on the other hand, since only four plastic operations were performed, it illustrates the fact that even long-standing chronic cases of empyema of the antrum with fistula can be cured by relatively simple means. Undoubtedly, some of these eight patients with failures might have been cured by simple plastic operations. The results indicate the wisdom of the modified Krause window operation, followed by simple

measures, and the folly of irrigation and treatment through the fistula.

CONCLUSIONS.

1. Treatment of infection of the antrum through an alveolar fistula does not seem advisable.

2. If the antrum has become infected, adequate intranasal drainage gives infinitely better results.

3. Care should be taken to avoid the formation of a permanent alveolar fistula.

4. An alveolar fistula may be closed after treatment has cleared up the empyema of the antrum.

26 *Fourth Street.*

TONSILLAR HEMORRHAGE.*

By L. LEROY JONES, M. D., Portsmouth, Va.

Of all operations performed by medical men, the most frequent is that for the removal of tonsils and adenoids. The subject may be suffering from signs and symptoms of interference with physical and mental developments, lower state of resistance of the digestive system, systemic infection, ear disturbance and, as a consequence, may be reduced to partial invalidism. The operation is rarely urgent, but is usually a matter of expedience. These two facts, namely, the frequency of the operation and the comparatively healthy state of those undergoing it, make it imperative that we choose the best mode of procedure to eliminate as far as possible all attendant risk. The most notable risks encountered are those associated with the general anaesthetic, when such is used, and the post-operative hemorrhage. This paper is concerned solely with the latter.

Some degree of hemorrhage is an inevitable part of every operation on the tonsils, in which their nutrient vessels are severed. In the average case, the bleeding ceases in a few minutes and the total amount of blood lost is within fairly moderate limits, and hemorrhage beyond this amount, and which is sufficient to cause alarm, risk of the life of the patient, is due to something unusual in the source of bleeding, either anatomical, pathological or surgical, or to certain factors which inhibit normal clotting and physiological arrest of hemorrhage. I am going to discuss briefly the factors that should be thought of prior to and at the operation where there is blood lost beyond the average, usually resulting from a technically perfect, surgical procedure. First, age is a factor that is generally admitted, profuse hemorrhage being probably more frequent in adults than in children. In this connection, we think of increased vascularity, the fixation of the vessel walls as well as disease of the vessel walls, such as arteriosclerosis. High blood pressure is a factor to keep in mind, also conditions which impair the ability of the blood to coagulate.

It is my opinion that sex has no influence up to the age of puberty, apart from the hemophilia. Beyond this age, females are more prone to anaemias and blood changes that are likely to impair clotting. Beyond the fourth decade, males are more prone to the diseases of the blood vessels associated with alcoholism, tobacco, nephritis, syphilis, etc. Short-necked, florid patients are usually more full-blooded and bleed more freely. I believe that it is safer not to operate on females during menstruation as a hemorrhage may act vicariously for the menstrual period and it is reasonable to think there is temporary diminished coagulability of the blood approaching the menstrual time. However, on investigating several works on gynecology, I failed to find any light on this point.

Abnormal vessels, concealed types and vessels of large calibre, may enter the tonsil direct without first subdividing, forming anomalous tonsillar arteries. I think that it is said that approximately one case in seventy-five has an anomalous tonsillar artery, so it is of vital importance to bear this in mind.

THE INFLUENCE OF OPERATIVE AND ANESTHETIC TECHNIC UPON SERIOUS HEMORRHAGE OF THE TONSIL

As far as I know, any technic may be followed by serious post-operative hemorrhage. To discuss the technic of all methods in relation to such a complication would demand far more time than is at my disposal, and would be of little value. As far as I have been able to determine, there is no relationship between the anaesthetic used, whether local or general.

TYPES OF HEMORRHAGES: Primary, occurring at the time of operation; post-operative, coming on a few hours after operation (which is usually a continuation of the primary un-

*Read at a meeting of the Norfolk County Medical Society.

checked); and secondary, occurring between the fourth and seventh days. Quite frequently *primary* hemorrhage may be brisk for a few seconds, but generally ceases spontaneously in 3 or 4 minutes. Pressure properly applied will check capillary bleeding and, if kept up long enough, will control hemorrhage from larger vessels. Pressure is made in various ways, the most frequent, generally used method is gauze sponges in sponge forceps. After pressure is made for a few minutes, should there be vessels that continue to bleed, they should be sutured, or dealt with by other means. In suturing the vessels, it is desirable to have the fossa fully exposed by the use of a pillar retractor, and good illumination, and, as a rule, there is little difficulty in placing the ligature around the bleeding vessel. I believe that the innumerable drugs and preparations (to quote Dr. Joseph White), are more or less worthless when we are dealing with real hemorrhage. Rarely we find cases in which there is a general oozing from the tonsil fossa and the separate bleeding vessels cannot be found. In such cases, when the various preparations used fail to give results, suturing a gauze sponge in the fossa for 24 hours will frequently control the bleeding. Should such an oozing be due to delayed coagulation of the blood, as for instance, in the hemophiliae, the ideal treatment would be transfusion, should a desirable donor be available. If such treatment is not practical, we usually resort to intravenous use of horse serum and the various other hemostatic serums.

Post-operative Hemorrhage: I believe in a majority of cases post-operative hemorrhage is simply a prolonged continuous affair of the primary hemorrhage. In other words, when a tonsil operation is complete with both tonsil fossae dry, it is to my mind the exception, and not the rule, to have a post-operative hemorrhage. However, in spite of every care, we have to cope with it occasionally. The first evidence noticed is that the patient vomits a quantity of bright blood, and my hospital orders are always to notify me immediately when such happens. The throat is always to be inspected when there is such an occurrence. If ignored, the vomiting will, most likely, occur two or three times and the patient becomes weak and fainty and we have to deal with the effects of a severe hemorrhage. It might be worth while to mention here the difference between the above-described type of vomiting and the type that is occasionally seen from nausea, due to the anesthetic. When the patient leaves the operating room with a dry throat, the blood is scanty and dark. It is very important to describe in detail this differentiation to all pupil nurses, in order that they may know when, and when not, to make an immediate report. I think that every patient should be laid on one side with the face in a semi-prone position, so that any blood from the pharynx may gravitate to the mouth instead of the stomach. When hemorrhage is found to be in progress and the patient in a fainty condition, general treatment for acute anaemia should be instituted. If, on inspection, one fossa contains a clot, the bleeding is from this side. If both contain clots, then both are bleeding. The clot should be removed and the blood vessels dealt with as described above.

Secondary hemorrhage, occurring usually from the fourth to the seventh day after operation, ordinarily is not serious and is caused by opening of small vessels when the white film, which lines the fossa after tonsil operation, begins to slough off. To remove the clot and make gentle pressure in the fossa for a few minutes is, in the majority of cases, sufficient to control this type of bleeding.

Professional Building.

CESAREAN SECTION:

Its Indications and Limitations.*

By R. P. KELLY, M. D., Lynchburg, Va.

In considering this subject, I have in mind the classic operation, and what I shall say refers chiefly to this operation, since few men, in this part of the country, are doing anything else. I realize that certain contraindications to, or limitations of, the classic, or corporeal, cesarean section may be more or less extended when we do the low, or cervical cesarean section as practiced by Dr. De Lee, of Chicago Lying-In, and others.

In considering my subject, I shall call attention to these conditions, in the course of the discussion, as they present themselves.

Classic cesarean section is performed entirely too frequently and, often, without a clear conception of the indications for and against the operation. In fact, many of the

*Read at the thirty-fourth meeting of the South Piedmont Medical Society, at South Boston, Virginia, April 18, 1922.

papers we have heard, or read, on the subject have been on indications for, while very few have mentioned the limitations of the operation. It would seem, on the contrary, that quite a few are eagerly waiting an excuse which will *seemingly* justify resort to this spectacular but simple operation, not seriously considering the large mortality it carries, but desiring more the glory and advertisement it affords, if any.

There is no obstetrical operation which is fraught with such a large maternal mortality as that of cesarean section; consequently, if possible, we should always seek some other means of delivery, reserving this operation for those cases in which, as a rule, the indication is well defined. Let me state, however, there are occasionally border-line cases in which the question is quite a difficult one to decide.

Just a few words about the mortality and morbidity. On this point I wish to quote from a paper of De Lee on "The New Methods of Cesarean Section: Report of Forty Cases," read at the A. M. A. meeting, Atlantic City, June 1919, in which he says:

"Accoucheurs of experience know that cesarean section is not so safe. They know that their good results are due to the careful selection of the patients submitted to the operation. They have observed numerous fatalities when proper strictness was not observed in deciding on the abdominal delivery. F. S. Newell said he knows that in several towns around Boston, the mortality (unpublished) from cesarean section has been frightful. He reports eight deaths in 100 cases at the Boston Lying-In Hospital up to 1909. Amand Routh, in 1910, found a general mortality for England of from 2.2 to 34 per cent., depending on the condition of the mother at the time of the operation. Gragin had 143 clean nontoxic cases with three deaths. Williams believes the general mortality will be 10 per cent., and only in the most ideal surroundings and, at the beginning of labor, will it be from 1 to 2 per cent.

"In Chicago, deaths due to cesarean section not infrequently occur but are not put on record, and recently the newspapers of a certain county of the State published a successful cesarean section as a wonderful achievement, the woman being the first to survive the operation in the county.

"There is an unavoidable mortality to cesarean section. It increases: First, with the length of labor; one might say about 1 per cent., every two hours; second, with the number of vaginal examinations made, or operations attempted; third, with the rupture of the membranes; fourth, with the lack of skill of the operator. Furthermore, there are certain women who carry infection in the vagina —harmless there, but fatal if brought on to the peritoneum. There is no way of discovering it beforehand. Leopold, of Dresden, found gonorrhea in some of these cases.

"In addition to the mortality, the classic cesarean section has a distinct morbidity. Just as the mortality has been gradually reduced by proper selection of the cases, by operating early, by refinement of operating room technic, etc., so has the morbidity been reduced—but not in like proportion. A large proportion suffer from peritoneal shock. In fully 20 per cent. of the cases there is fever after opertaion. Uterine abscess occasionally follows, partial paralytic ileus and gastric dilatation not seldom occur, adhesions of omentum or intestine to the uterine or abdominal scar are the rule, and the danger of rupture of the uterine line of suture in subsequent labor is still a real one. The five main objections to the classic cesarean section are: (1) the inherent mortality, (2) the frequency of abdominal complications, (3) adhesions, (4) rupture of the scar in subsequent labor and (5) the necessity to restrict the operation to clean cases."

In view of this, we should most conscientiously consider the possibilities of a fatal termination; we should take into account every questionable point, both for and against, with due regard, not only for the present but also for the future health and happiness of the patient.

As a rule, I do not think the general surgeon is the person qualified to decide upon the question of cesarean section. The obstetrician is the person to be called for such cases. Often the surgeon is too inclined to operate, not so much because he is a surgeon, but because he is not an obstetrician, and because cesarean section is often the only and easiest way he knows of getting out of obstetrical difficulties. Let me emphasize the importance of calling in the obstetrician, *not late but early*, and, above all, where there is the slightest suspicion that something is wrong, those referring cases should observe the strictest asepsis in making examinations. Every one doing obstetrics should train himself to do rectal examinations on his patients. The obstetrician

and not the surgeon, or general practitioner, as a rule, should do these operations.

The indications for cesarean section may be divided, for consideration and discussion, into the *Absolute* and *Relative*, this classification being based on the length of the conjugata vera.

The question of cesarean section has arisen among obstetricians and surgeons when one of the following conditions has been encountered.

First: Contracted pelves, which vary considerably as to the degree of contraction or deformity.

Second: Oversized child with a normal pelvis, which gives us practically the same condition as that just mentioned.

Third: Obstruction in the lower birth canal to the passage of the child, as tumors, congenital deformities, etc.

Fourth: Severe toxemias of pregnancy.

Fifth: Placenta previa.

Sixth: Abruptio placentae.

Seventh: Organic diseases, such as severe cardiac diseases, or tuberculosis.

Eighth: Breech, face, brow, transverse and occiput posterior presentations and positions, in primiparae, especially.

Let us now take up these conditions, with an effort to analyze them briefly. About 80% of the cases with contracted pelves will deliver normally, if left alone. Therefore, in every case, we should very carefully determine, or estimate, the amount of disproportion between the baby's head and the mother's birth canal. If, after careful pelvimetry, both external and internal, and careful estimation of the size of the baby, we are still unable to decide upon the best method of treatment, we should give the patient a *test of labor*. In arriving at our decision we should also consider the moldability of the head, which is very important, and the character of the pains. Of course, when the conjugata vera is 6½ c. m., or below, the indication is *absolute* and cesarean section must be done. Not even a pubiotomy is considered, since this operation is limited to cases where the conjugata vera is above this figure, and, besides, is a very dangerous operation.

The cases which are most difficult to decide are those with a conjugata vera of from 6½ to 9 c. m., but many of them will deliver spontaneously if left alone. In the cases from 9 to 10 c. m., normal labor is the rule.

The patient's condition must be disregarded when the indication is *absolute*, for here it is *too great a risk for the mother* to attempt delivery by any method other than cesarean section. Should there be any infection, the uterus, too, should be removed, or a low cervical cesarean should be done.

The *relative* indication is seen when we decide that the safest way for *both mother and child* is to deliver by cesarean section. However, the condition of the patient must be carefully noted—whether or not she can be brought to a hospital; whether or not she has had numerous vaginal examinations, especially by unclean hands; whether or not efforts to deliver have been made by the application of instruments, etc.; whether or not the membranes have long been ruptured; and whether or not gonorrhea is present. Should there be infection *of any kind* the *relative* indication for classic cesarean section is no more, and we should find other means of delivery. Again, a Porro, or the low cervical cesarean section may be done with sterilization of the patient, if indicated.

The *relative* indication would also take into account the cases of placenta previa, eclampsia, and practically all other cases which would be treated by cesarean section, assuming the conjugata vera diameter not to be a factor. Again, our indication would be relative in a case of overgrowth of the child and a normal pelvis, even though the patient had formerly been delivered normally. In all cases, we must, as nearly as possible, estimate the relative size of the *passage and passenger*. If we do this, we can forget the classification, for, after all, in a given case, it is not so much the size of the baby or the size of the pelvis, but the *relation* of one to the other, upon which we must base our treatment.

We can hope to obtain the best results only by very careful prenatal care, and by careful study of the pelvis in every case of pregnancy we attend, regarding the shape and size of the inlet, exostoses and thickening of the sac-

rum, and contraction of the outlet. Many cesarean sections can be prevented by this prenatal care, by induction of labor shortly before term, and, in some cases, perhaps, diet may help. We, who do obstetrics, are responsible, through our neglect of this prenatal care, for many of the cases which are delivered by cesarean section.

When we encounter definite obstruction to the passage from tumors, etc., again we have no alternative, the indication is *absolute.*

As to eclampsia, I feel sure some of you will agree with me while others may not. Personally, I do not consider eclampsia as an indication for this operation. We might make one exception, at least, to this rule,—the case of a *primipara* with a rigid, undilated os, who shows no sign of improvement after free venesection (Williams). In these cases, as Williams states, the operation is more conservative than forcible attempts to dilate the cervix manually or by instruments. Dr. Williams says that *once in about* 15 *or* 20 *cases* of eclampsia he considers the operation indicated.

The conservative treatment of these cases has proven to be much safer for both mother and child. In the cases treated by cesarean section there has been a maternal mortality of about 20%, and a high fetal mortality. By the conservative treatment we have reduced this mortality to about 10%, with a corresponding reduction in the still-birth rate. I presume you all know what is meant by "the conservative treatment" of these cases.

Placenta previa, like eclampsia, has been, and is, the excuse for too many cesarean sections. Generally speaking, this, too, is not an indication for cesarean section. Occasionally, however, operation is the best method of dealing with the condition, especially in cases of complete placenta previa, with an undilated cervix and profuse hemorrhage. The best general means of treating these cases is the bag, followed by a version, as they control the hemorrhage and dilate the cervix.

In abruptio placentae, as in placenta previa, there might occasionally be a case in which cesarean section would be the best means of treatment in interest of the mother. About 95% of the babies are lost and 50% of the mothers. I should say that where the hemorrhage is severe and labor has not begun, when the cervix is not dilated, or easily dilatable, cesarean section, or a Porro operation, would be indicated.

It might occasionally be possible that some organic disease, especially heart disease, would render cesarean section the safest method of delivery for mother and child.

Transverse, breech, face, brow nad occiput posterior presentations and positions have too often been the *excuse* for cesarean section. These cases should best be treated by early recognition, and timely correction. As Williams says, one can readily see the advisability of the operation in neglected cases, but the sad part is that *not only* has the *condition* often been neglected, but also the asepsis, so that, even in such a case, we have a most serious contra-indication, *unless* a low cervical cesarean section were performed. Should classic cesarean section be done under these conditions, the uterus too, would have to come out, and it would be a question whether or not, in such a case, we would be justified in doing so radical an operation to save a child that would probably die from the long neglected original condition. If we had a contracted pelvis to deal with, or an oversized child, the situation would be altered.

Before doing a cesarean section, we should be absolutely sure the child is alive. I saw one of the best men in the country err on this point. The baby was alive Sunday night at 10 o'clock. The operation was scheduled for 9 A. M. Monday. The operator thought the child was living because he had heard the fetal heart that night before—but, imagine his embarrassment when he removed a dead baby from the uterus. The lesson from this is—*always* listen for the fetal heart immediately before operating.

The objection to a test of labor is that our mortality increases with every hour of labor, about 1% every two hours; we should, therefore, attempt to make our diagnosis before labor begins, or shortly after, because after the second stage is well established, our mortality is 10% or more. Dr. Williams' total

mortality, all cases included, up to a few years ago, was 8% but, in the cases done at the "*time of election*," he had only one death.

The contra-indications for cesarean section are, to my mind, *equally as important* as the indications for the operation. They may be outlined as follows:

First: Cesarean section is contra-indicated in a patient who has become exhausted by a long labor, unless we give her a good rest by the use of morphine.

Second: Classic cesarean section is contra-indicated in a woman who has had any intra-uterine manipulations, or who has had numerous vaginal examinations.

Third: Classic cesarean section is contra-indicated in any case with long ruptured membranes, and who has had even one vaginal examination by a physician or a midwife whose technique is questionable.

Fourth: Classic cesarean section is contra-indicated, or unnecessary, in abnormal presentatinos, as face, brow, breech, transverse and occiput posterior, especially since Dr. Potter has shown us how to deliver the shoulders, arms and head in versions.

Fifth: Classic cesarean section is contra-indicated, or unnecessary, in cases of abruptio placentae, placenta previa and eclampsia, with few exceptions.

Sixth: Temperature is a contra-indication for the classic operation, unless we can prove positively that it is not due to uterine infection.

Seventh: Classic cesarean section is contra-indicated in cases of gonorrhoeal or syphilitic infection, since general peritonitis is likely to follow in the former case, while death of the infant may follow in the latter, 17% or more of still births being due to syphilis.

Eighth: Poor operative risks, such as thyroid cases, or very fat women, would be a deciding factor against delivery by cesarean section.

To sum up the question: As McPherson puts it, cesarean section is a very useful operation for removing the child from the pregnant woman at or near term. First: when there is a relative disproportion between the birth canal and the baby, sufficient to render the birth extremely difficult or impossible. Second: in case of serious obstruction of the birth canal due to tumors or deformities, congenital or acquired. Third: In occasional cases of placenta previa, abruptio placentae, eclampsia, or organic disease.

Finally: I feel quite certain that we may reasonably expect almost perfect results from our cesarean sections if we follow the above suggestions in considering the treatment of obstetrical complications.

705 *Church Street.*

PROGRAM FOR MALARIA CONTROL IN VIRGINIA.*

By ROY K. FLANNAGAN, M. D., Richmond, Va.
Assistant Health Commissioner.

The malaria control work of the State Board of Health is conducted in co-operation with the International Health Board of the Rockefeller Foundation and the United States Public Health Service. The general supervision falls to the Assistant Health Commissioner in his capacity as Director of the Bureau of Rural Sanitation.

Dr. Clinton A. Kane is State Director and P. A. Surgeon Louis L. Williams, Jr., has been assigned by the U. S. Public Health Service to co-operate with the State Board of Health in its anti-malaria program. These two officers have collaborated on a program for malaria control and have made much progress in carrying it out. L. M. Clarkson, Sanitary Engineer, is charged with the direct supervision of the engineering features of the control work, and Miss Harmon is office Secretary.

The program comprehends the selection of a group of counties in which the work is first to be prosecuted, taking if possible seven infected counties yearly, the work to proceed along the following lines:

1. Educational and publicity work.
2. Collection of malaria and mosquito statistics.
3. Close co-operation with all public officials, health officers, doctors, corporations or citizens wishing advice or assistance in malaria control.
4. Town and suburban malaria control work.
5. Rural malaria control work.

---

*Read before the Virginia Conference of Social Work, Danville, Virginia, May 8, 1922.

6. Follow-up of work previously done, the compilation of statistics and appraisement of results and new surveys.

Educational and Publicity Work.

1. *Course of study and literature.*—Realizing that the children must be instructed, if permanent and progressive health work is to be done, a ten weeks' course of instruction as to malaria and malaria control has been worked out for use in the schools of infected counties The course covers one hour weekly, and has been adopted in the schools of the counties now being worked: namely, James City, Isle of Wight, Nansemond, Brunswick, Southampton, Princess Anne and Norfolk. The teachers readily co-operate and, since February, 279 schools have given this course and held examinations thereupon after completion. In these courses malaria charts and catechisms were freely used, and specially prepared bulletins on malaria were placed in the hands of the children for home distribution. As an addition to the courses, demonstrations in malaria control are given by the officers to as many schools as possible during the season.

2. *Lectures and pictures.*—Lectures are given by various members of the State Board of Health at strategic points and moving pictures on mosquitoes and drainage work are to be shown throughout the whole Eastern section of the State. In many of the counties, this part of the program has been carried out. A special moving picture has been prepared showing before and after work in malaria control. These pictures always receive an enthusiastic reception.

3. *Newspaper articles, posters and exhibits.*—Newspaper articles are systematically furnished the local papers. Posters are placed in stores, banks, hotels, public buildings and railroad stations, and tin signs giving instruction are posted on trees and fences along the roads and near every public gathering place throughout the campaign counties. Exhibits are held at schools, public gatherings, chautauquas, and county fairs.

Collection of Malaria and Mosquito Statistics.

1. From doctors—reports and statements.
2. From officials (nurses and health officers included.)—
3. From schools—teachers' reports on children.
4. Record of drainage work and other mosquito measures previously taken.

(Complete malaria census started in 1921 to be continued from year to year).

Co-Operation With Public Officials, Health Officers, Doctors, Corporations and Citizens.

Team work is more essential in the control of malaria than in any other disease and it must be secured completely in order to insure results. No other disease, however, responds more readily to co-operative effort. Public officials are first approached, for against their opposition nothing can be accomplished. Health officers are expected to take initiative in inviting aid and their co-operation is usually taken for granted. Doctors are counted upon to furnish the data upon which the campaign is based, their active help is essential in getting the people to back up malaria control plans and to carry out the treatment program so necessary for ridding the community of carriers of the disease.

A malaria ridden district is a poor district and though people are sickly they very frequently cannot pay doctors' bills. That malaria is not essential to the prosperity of the medical profession is clearly shown in the wide areas of the State free from this disease. Enlightened self interest, therefore, on the part of the doctors would impel them to aid in an anti-malaria campaign, simply on the ground of less work and more pay. The humanitarian and patriotic reasons for their co-operation so overwhelmingly apparent, however, usually place them heart and soul with our officers in their efforts to banish this disease.

The co-operation of the railroads, manufacturing corporations, lumber mills and other industries employing labor within infected districts is always solicited, and they almost invariably see that it will be greatly profitable to them to banish a disease that causes so much loss of time from work. Their aid is, therefore, very freely given.

Town and Suburban Malaria Control Work.

In such towns within the campaign area as present a definite malaria problem and that are willing to co-operate financially with the

State Board of Health in malaria control, co-operative demonstrations are being made. This financial co-operation is rendered possible by aid furnished by the International Health Board. This Board appropriates $6,500.00 this year for malaria control work in Virginia in addition to the sums it gives for the promotion of rural health organizations. This amount is matched by an equivalent amount from the State Board of Health, making a joint fund of $13,000.00. Five thousand dollars of this is segregated for town and suburban malaria work. The towns aided are required to match Bureau funds dollar for dollar. Under this plan the towns of Smithfield, Lawrenceville, Oceana, Suffolk and Ocean View are now co-operating. West Point and Emporia having previously accepted the plan, are now enjoying unwonted freedom from mosquitoes and malaria in consequence. Much drainage work is being done with the use of dynamite, which proves much cheaper and more expeditious than the old man-ditching method.

The program used in conducting anti-malaria work in a town consists of the following.

1. A malaria census is taken.

2. A survey and estimate of cost and of work to be done is made.

3. The most practicable method of control is adopted.

4. The work is then done under supervision of the engineer of the malaria bureau and the officials of the town or city.

The items of malaria control work wherever done are (a) ditching, i. e., cutting or blasting out trenches through swampy areas to drain the larger mosquito breeding areas. (b) Brushing, i. e., cutting down undergrowth and grass along streams and ponds so that fish and other water enemies of the mosquito can easily get to them while in the wiggler stage. (c) Introducing mosquito eating minnows into streams and fresh water pools. (d) Filling in the smaller pools that cannot possibly be drained. (e) Oiling. Kerosene oil may with satisfaction be used on smaller pools, rain water barrels and in drip cans. (f) The use at times of mosquito killing preparations (larvacide). (g) Screening homes and other houses (16 mesh wire). (h) Treatment of cases and carriers with quinine.

Rural Malaria Control Work.

1. This consists in locating all breeding places of malaria-bearing mosquitoes and making spot maps of the areas involved.

2. Concise report on most feasible methods of control at each location.

3. Inducing control through county officials, land owners, householders, road builders, railroads and industrial plants.

4. Anticipating and preventing future man-made breeding places.

5. Inducing physicians to adopt and use (where not previously done) only the standard malaria treatment recommended by the National Malaria Committee.

6. Inducing druggists and stores to handle the standard treatments and not to sell "chill tonics."

7. Establishing quinine stations where needed.

8. Aiding in the formation of county health departments that this work may have intelligent supervision and direction and upkeep when the immediate needs of the situation are met and the malaria squad has gone.

Follow up Work Done—The Making of New Surveys—Rendering Reports and Compiling Statistics.

Malaria control work, necessitating as it does much ditching and screening and co-operative work, must be closely followed up or it soon goes to pieces, ditches fill up, screens wear out, people get careless and need to be reminded of their duty to themselves and the public. All malaria campaign programs projected provide for systematic visitation, continued education and funds for maintainance of drainage work. The public is demanding more and more of the Malaria Control Bureau, and hence new surveys are being made as time or opportunity is afforded. It is absolutely necessary, of course, in order to keep track of the work that prompt, full and regular reports be made of it, and that accurate statistics be compiled.

This program is being purused with vigor, and as an evidence of its need and popularity, more towns are asking aid from us than the funds in hand permit us to give. Great satisfaction is expressed by citizens at the rapid progress being made in the localities where the work is being done.

The great need in malaria control is money, and as the people wake up to the dividends returnable in health and increased prosperity by its proper expenditure in such work, malaria in Virginia will disappear entirely and many fertile areas in the State now thinly settled will be occupied by healthy, prosperous citizens.

TUMORS OF THE MAMMARY GLAND.

By NUMA D. BITTING, M. D., F. A. C. S., Durham, N. C.

Tumors of the mammary gland, for the sake of more intelligent study and treatment, have both clinically and pathologically fallen into the benign and malignant classifications. Some eminent specialists have minimized the importance of dealing radically with the benign group, depending upon their diagnostic ability to determine which types may or may not undergo malignant degeneration. Certain clinical signs are definitely diagnostic of cancer when present, but these signs may not appear until the cancer has existed for some time. Just when a benign tumor begins to undergo malignant changes cannot be definitely stated, and it is oftentimes too late to relieve the patient when these positive signs appear.

As to the etiological factors producing breast lesions, but little can be positively stated. We have been able to trace a few growths to direct injury and infection. Pregnancy and lactation predispose to tumor formation, and tend to greatly aggravate existing breast lesions. Investigation of our records shows that the majority of growths mysteriously appear, and the patient accidentally discovers a lump in the breast. The menopause may play some part in the production of tumors, but, so far as we have been able to ascertain, no authorities have been able to prove the relationship. However, benign tumors are rare after the menopause, and malignant tumors are much more frequent.

Age has for a long time been regarded as an important factor in the diagnosis of breast tumors. It has seemed to establish a rather definite time, before which malignancy rarely occurs. In the majority of cases, the tumor is benign before twenty-five years of age. In very rare instances, malignancy has been found to exist in the adolescent stage. Bloodgood reported a group of 885 malignant tumors in which 3.9 per cent. were under thirty years of age, and only one case was as young as twenty-one years of age. The length of time a tumor has existed has no direct relation to the question of malignancy, and should not be taken as a guide. Tumors that have existed for many years and showed no signs of growth may quickly undergo malignant changes and rapidly advance beyond the curative stage.

The diagnosis of tumors of the mammary gland determines the plan of surgical procedure to be carried out in each individual case. To differentiate the benign from the malignant and the operable from the inoperable malignant growths is of great importance both to the patient and the surgeon. Benign tumors may be in some cases differentiated from malignant tumors by their clinical characteristics. They are usually, but not always, encapsulated and freely movable. There is no attachment to the skin nor retraction of the nipple. They are often multiple and occur early in life. Discharge from the nipple may be present but is not a constant sign. Pain may or may not be present.

Malignancy may be suspected when the tumor produces dimpling of the skin and retraction of the nipple; malignant tumors are usually fixed but may be movable when seen early and are non-encapsulated. They often infiltrate the surrounding tissues. Ulceration of the nipple, as in Paget's disease, when present, is a positive sign. The malignant tumor is usually single and rarely multiple. Enlargement of the axillary lymphatics should not be taken as a constant guide, as it is found in benign as well as malignant conditions. Besides, it cannot always be felt when associated with malignancy until late in the course of the disease.

Early diagnosis and early treatment of breast tumors are the points we wish to stress most. We do not share the belief of some surgeons that benign tumors can always be differentiated from malignant and that operation in the benign cases is not indicated. As soon as a tumor in the mammary gland is discovered, the doctor should endeavor to determine whether it is benign or malignant. If the signs as above outlined point to cancer, the radical operation should be performed at once. If the tumor appears to be innocent or of doubtful character, it should be removed—not a portion of it but all of it, by clean dissection—and studied by the frozen section method. Then,

if beyond any reasonable doubt the tumor is innocent, the incision may be closed with little or no mutilation of the breast. But, if a small doubt exists as to the malignant character of the tumor, a stained section should be prepared and the diagnosis made by a competent pathologist as early as possible. If further doubt should exist, the radical operation should be performed, because it is better to operate even a pre-cancerous lesion than to operate in the advanced stage of cancer with little hope of a cure.

Whenever cancer can be definitely diagnosed, the question of operability should be determined. The x-ray will aid greatly in ascertaining this fact. Metastases in the lungs, mediastinum, liver and diaphragm render the case hopelessly incurable. Palliative operation sometimes makes the patient more comfortable and, when this can be safely done, is justifiable. Whenever patients who have reached the age of 21 years present themselves with a single tumor in one breast, operation is indicated. The function of the breast is not injured by excision of the tumor and, if the tumor is found to be benign, the patient is protected by the removal of a pre-cancerous lesion. If, on the other hand, the growth proves to be malignant, the radical operation must be performed while the disease is yet local, to produce a cure.

Conclusions

(1) Early recognition and early radical operation in malignant cases produce a higher percentage of cures and a lower percentage of morbidity.

(2) Whenever possible, it is better to operate in the pre-cancerous stage. This will result in practically no mortality or morbidity.

(3) Innocent tumors should be removed in toto by clean dissection. This precludes the probability of cancer development and produces little or no mutilation of the breast.

(4) Every woman who consults her physician about a lump in her breast should be advised and, if necessary, urged to submit to a thorough examination at an early date. The family physician will render his patients a great service by instructing them to report at once any tumor or lump they may discover in the breast.

Correspondence

Smallpox in the Phillippines.

Richmond, June 27, 1922.

To The Editor:

Certain anti-vaccinationists have been circulating in Virginia literature regarding the smallpox situationn in the Philippine Islands. Upon request, the Surgeon-General of the United States Public Health Service, has sent me the following official report on this subject, which I think will be of interest to many doctors of the State who have seen such literature.

E. G. Williams,
State Health Commissioner.

Memorandum for the Surgeon-General.

June 3, 1922.

Relative to Letter of Stanley H. Osborn, Deputy Commissioner of Heaith, Hartford, Conn.

The specific reasons for the appearance of smallpox in the Philippines, as requested by Deputy Commissioner Stanley H. Osborn, are substantially as follows:

Smallpox, which for many years had caused about 40,000 cases per year in the Philippines, was, for all practical purposes, eradicated following the general vaccination which was completed in 1912. There were, however, isolated portions of the islands, such as inaccessible parts of the islands of Samar and Leyte, where cases continued to occur, and certain places in the Moro province, which comprises the island of Mindinao and the islands of the Sulu Archipelago, where, as the inhabitants were all Mohammedans, vaccination could not be practiced unless preceded by a long and extensive campaign of education. In these places then, smallpox still persisted.

In 1916 an increase in varioloid was noted and it was realized that unless prompt vaccination could be again carried out, there was likelihood of another outbreak of smallpox. The matter was taken up with the Insular Government authorities and an appropriation was asked from the Phiippine legislature. The general impression, however, that smallpox had disappeared for good, was so widespread that sufficient appropriations could not

be obtained. Attempts were made to vaccinate as extensively as possible with the limited funds under the control of the Philippine Health Service, but they were insufficient to accomplish the desired result.

With the passage of the Jones bill, which granted practically complete autonomy to the Philippine Islands, a strong desire grew up that all government positions should be filled by the Filipinos and that Americans should be removed. This resulted in considerable resistance to measures instituted by American officials and in failure on the part of Filipino subordinates to carry out instructions given by such officials, also Filipino subordinates failed to co-operate with their American superior officers and report the presence of disease when the same occurred.

The result of the above was that the presence of smallpox in local communities was not reported until its concealment was no longer possible. The first deaths in the community were certified as due to other causes than smallpox. Vaccine issued to provincial and municipal health officials was not used though reported as used. The only portion of the population which could be reached with certainty was the school children, which accounts for the fact that eighty-five per cent. of the cases occurred among children under the age for entering school.

Due to the long period from 1912-1917 in which there had been substantially no smallpox, the vaccine producing facilities of the Bureau of Science had been allowed to deteriorate, with the result that when the rush came they were unable to furnish vaccine of good quality in sufficient quantity to meet the demands. Their supply was supplemented by the importation of about one million units from foreign sources, which had the effect of giving an active vaccine of a different strain from the one that had been used for a number of years.

To illustrate a few specific occurrences, smallpox had existed, as shown by later investigation, in the province of Cavite for practically two months before its presence was reported by the District Health Officer, and had become fairly well disseminated throughout the small towns and villages before its presence was officially known. The health officials of several communities in the vicinity of Manila reported that no smallpox existed in their communities. Within two days after these reports were received, the Director of Health visited these communities and personally made house to house inspections, during the course of which a number of cases of smallpox were discovered. The health official when charged with neglect of duty defended himself by stating that his life would have been endangered if he had reported the presence of the disease. In one instance several thousand units of vaccine that had been reported as used were discovered hidden under papers and similar articles in a closet in the office of a district health official.

When the undersigned resigned as Director of Health, December 31, 1918, Manila and all the surrounding provinces had been freed from smallpox by carefully supervised vaccination, so conducted as to eliminate, as far as possible, the likelihood of false reports or returns. The undersigned informed his successor, a Filipino, that though smallpox had apparently disappeared and that sporadic cases only were being reported, undoubtedly it would be a matter of only a few months until additional outbreaks would occur in hitherto uninvaded provinces unless active vaccination was continued. This advice was not taken, and vaccination was allowed to lag until smallpox made its appearance in epidemic form in these new areas, with the result that 60,612 cases occurred in 1919 as compared with 33,092 in 1918.

To summarize then, the reappearance of smallpox was due to the following facts:

1. Over-confidence on the part of the public and the legislature in the previous general vaccination terminated in 1912.

2. Failure of the legislature to appropriate sufficient funds, even though urgently requested.

3. Lack of co-operation on the part of provincial and municipal health officials, manifested by failure to report the presence of disease in their communities and failure to properly use the vaccine materials supplied them.

4. A general desire to bring about displacement of American officials and their replacement by Filipino officials.

5. Concealment of children under school

age by mothers so that vaccinators were unable to reach and vaccinate them.

6. Partial breakdown of vaccine production facilities due to overconfidence in previous vaccination and shortage of appropriations.

7. Failure to realize after the outbreak in the areas first involved was controlled that the disease would inevitably appear in other areas unless the population was promptly and efficiently vaccinated.

Respectfully submitted,
J. D. Long, *Medical Adviser.*

The Truth About Medicine

Doses Proposed for the United States Pharmacopoeia, Tenth Revision.

The following list represents changes in the U. S. P. IX [Revision], dose or doses for newly admitted substances as proposed for inclusion in the new Pharmacopeia. All other doses remain as at present official. These are submitted for the information of physicians and pharmacists. Any comments should be sent to E. Fullerton Cook, 636 So. Franklin Square, Philadelphia. Pa.

Acidum Benzoicum	1 Gm. (15 grains)
Acidum Citricum	Dose Omitted
Acidum Lacticum	Dose Omitted
Acidum Tartaricum	Dose Omitted
Aconitum	0.06 Gm. (1 grain)
Antimonii et Potassii Tartras	0.003 Gm. (1/20 grain)
Apomorphinae Hydrochloridum	Expectorant, 0.002 (1/30 grain) Emetic, Hypodermic 0.005 Gm. (1/12 gr.)
Asafoetida	0.2 Gm. (3 grains)
Aspidium	Dose Omitted
Atropina	0.0006 Gm. (1/100 grain)
Atropinae Sulphas	0.0006 Gm. (1/100 grain)
Barium Sulphate	No dose
Benzosulphinidum	Dose Omitted
Bismuthi Betanaphtholas	1 Gm. (15 grains)
Bismuthi Subsalicylas	1 Gm. (15 grains)
Bismuthi Subgallas	1 Gm. (15 grains)
Bismuthi Subnitras	1 Gm. (15 grains)
Bismuthi Subcarbonas	1 Gm. (15 grains)
Calcii Chloridum	1 Gm. (15 grains)
Calcii Lactas	1 Gm. (15 grains)
Calumba	1 Gm. (15 grains)
Camphora	By mouth or Hypodermic 0.2 Gm. (3 grains)
Cerii Oxalas	0.6 Gm. (10 grains)
Cubeba	2 Gm. (30 grains)
Colocynthis	0.1 Gm. (1 1/2 grains)
Chrysarobinum	Dose Omitted
Digitalis	0.1 Gm. (1 1/2 grains)
Dakin's Solution	No dose
Dextrose C. P.	No dose
Dichloramin T.—	No dose
Extractum Aconiti	0.015 Gm. (1/4 grain)
Extractum Cannabis	0.015 Gm. (1/4 grain)
Extractum Cascarae Sagradae	0.3 Gm. (1/2 grain)
Extractum Fellis Bovis	0.4 Gm. (6 grains)
Extractum Hyoscyami	0.05 Gm. (5/6 grain)
Extractum Rhei	0.5 Gm. (8 grains)
Extractum Stramonii	0.02 Gm. (1/3 grain)
Fluidextractum Aconiti	0.06 c.c. (1/10 minim)
Fluidextractum Digitalis	0.1 Gm. (1 1/2 minims)
Fluidextractum Ipecacuanhae	Expectorant 0.06 (1 minim) Emetic 1 c.c. (15 minims)
Fluidextractum Lobeliae	0.1 c.c. (1 1/2 minims)
Fluidextractum Nucis Vomicae	0.1 c.c. (1 1/2 minims)
Fluidextractum Podophylli	0.3 c.c. (5 minims)
Fluidextractum Spigeliae	4 c.c. (1 fluidrachm)
Fluidextractum Tritici	8 c.c. (2 fluidrachms)
Fluidextractum Zingiteris	0.5 c.c. (8 minims)
Glyceritum Acidi Tannici	2.5 c.c. (40 minims)
Hexamethylenamina	0.3 Gm. (5 grains)
Hydrargyri Chloridum Corrosivum	0.004 Gm. (1/15 grain)
Hydrargyri Chloridum Mite	Laxative 0.15 Gm. (2 1/2 grains)
Hydrargyri Iodidum Rubrum	0.004 Gm. (1/15 grain)
Hydrargyri Salicylas	Intramuscular 0.06 Gm. 1/10 grain) twice a week
Hyoscyaminae Hydrobromidum	0.0006 Gm. (1/100 grain)
Hyoscyamus	0.2 Gm. (3 grains)
Infusum Digitalis	6 c.c. (1 1/2 fluidrachms)
Infusum Sennae Compositum	30 c.c. (1 fluidounce)
Iodum	0.01 Gm. (1/6 grain)
Ipecacaunha	Expectorant 0.06 Gm. (1 grain) Emetic 1 Gm. (15 grains)
Liquor Sodii Glycerophosphatis	0.6 c.c. (10 minims)
Lobelia	0.1 Gm. (1 1/2 grains)
Magma Magnesiae	Antacid, 4 c.c. (1 fluidrachm) Laxative (for children) 15 c.c. (4 fluidrachms)
Magnesii Carbonas	Antacid 0.6 Gm. (10 grains) Laxative, 8 Gm. (2 fluidrachms)
Magnesii Oxidum	Antacid 0.25 Gm. (4 grains) Laxative 3 Gm. (45 grains)
Magnesii Oxidum Ponderosum	Antacid 0.25 Gm. (4 grains) Laxative 3 Gm. (45 grains)

Massa Hydrargyri	0.3 Gm. (5 grains)
Mistura Glycyrrhizae Composita	4 c.c. (1 fluidrachm)
Morphinae Hydrochloridum	0.01 Gm. (1/6 grain)
Morphine Sulphas	0.01 Gm. (1/6 grain)
Nux Vomica	0.1 Gm. (1 1/2 grains)
Oleoresina Aspidii	Single dose, once a day, 4 Gm. (1 drachm)
Olooresina Capsici	0.015 Gm. (1/4 grain)
Oleum Anisi	0.1 c.c. (1 1/2 minims)
Oleum Aurantii	0.1 c.c. (1 1/2 minims)
Oleum Cari	0.1 c.c. (1 1/2 minims)
Oleum Carophylli	0.1 c.c. (1 1/2 minims)
Oleum Cassiae	0.1 c.c. (1 1/2 minims)
Oleum Chenopodii	1.0 c.c. (15 minims)
Oleum Coriandri	0.1 c.c. (1 1/2 minims)
Oleum Foeniculi	0.1 c.c. (1 1/2 minims)
Oleum Juniperi	0.1 c.c. (1 1/2 minims)
Oleum Lavandulae	0.1 c.c. (1 1/2 minims)
Oleum Limonis	0.1 c.c. (1 1/2 minims)
Oleum Lini	Dose Omitted
Oleum Menthae Piperitae	0.1 c.c. (1 1/2 minims)
Oleum Menthae Viridis	0.1 c.c. (1 1/2 minims)
Oleum Myristicae	0.03 c.c. (1/2 minim)
Oleum Pimentae	0.1 c.c. (1 1/2 minims)
Oleum Rosmarini	0.1 c.c. (1 1/2 minims)
Oleum Sassafras	0.1 c.c. (1 1/2 minims)
Oleum Thymi	0.1 c.c. (1 1/2 minims)
Paraldehydum	4 c.c. (fluidrachm)
Paraformaldehydum	Dose Omitted
Phosphorus	0.0006 Gm. (1/100 grain)
Pilocarpinae Hydrochloridum	0.005 Gm. (1/12 grain)
Pilocarpinae Nitras	0.005 Gm. (1/12 grain)
Potassii Iodidum	0.3 Gm. (5 grains) Antiluetic 2 Gm. (30 grains)
Potassii Nitras	0.3 Gm. (5 grains)
Pulvis Armaticus	0.3 Gm. (5 grains)
Pulvis Ipecacuanhae et Opii	0.3 Gm. (5 grains)
Sanguinaria	0.1 Gm. (1 1/2 grains)
Scopolaminae Hydrobromidum	0.0005 Gm. (1/120 grain)
Senna	2 Gm. (30 grains)
Sodii Benzosulphinidum	Dose Omitted
Sodii Glycerophosphas	0.3 Gm. (5 grains)
Sodii Iodidum	0.3 Gm. (5 grains): Antiluetic 2 Gm. (30 grains)
Spiritus Anisi	1 Gm. (15 grains)
Spiritus Juniperi	1 c.c.
Spiritus Menthae Piperitae	1 c.c. (15 minims)
Spiritus Menthae Viridis	1 c.c. (15 minims)
Stramonium	0.75 Gm. (12 grains)
Strophanthinum	Daily mouth or vein .0005 Gm. (1/120 grain)
Strychnina	0.002 Gm. (1/30 grain)
Strychninae Nitras	0.002 Gm. (1/30 grain)
Strychninae Sulphas	0.002 Gm. (1/30 grain)
Syrupus Ipecacuanhae	0.75 c.c. (12 minims) Emetic 15 c.c. (4 fluidrachm)
Syrupus Picis Liquidae	10 c.c. (2 1/2 fluidrachms)
Syrupus Pruni Virginianae	10 c.c. (2 1/2 fluidrachms)
Syrupus Sennae	8 c.c. (2 fluidrachms)
Syrupus Tolutanus	10 c.c. (2 1/2 fluidrachms)
Syrupus Zingiberis	10 c.c. (2 1/2 fluidrachms)
Thymol	0.125 Gm. (2 grains) Anthelmintic 2 Gm. (30 grains) divided into 3 doses
Thyroideum Siccum	0.06 Gm. (1 grain)
Tinctura Aconiti	0.6 c.c. (10 minims)
Tinctura Belladonnae	0.6 c.c. (10 minims)
Tinctura Cannabis	1 c.c. (15 minims)
Tinctura Digitalis	1 c.c. (15 minims)
Tinctura Ferri Chloridi	0.7 c.c. (10 minims)
Tinctura Gelsemii	0.3 c.c. (5 minims)
Tinctura Myrrhae	2 c.c. (30 minims)
Tinctura Nucis Vomicae	1 c.c. (15 minims)
Tinctura Opii	0.6 c.c. (10 minims)
Tinctura Opii Deodorati	0.6 c.c. (10 minims)
Tinctura Stramonii	0.75 c.c. (10 minims)
Tinctura Veratri Viridis	1 c.c. (15 minims)
Valeriana	0.75 Gm. (12 grains)
Veratrum Viride	0.1 Gm. (1 1/2 grains)
Zingiber	0.5 Gm. (8 grains)

Proceedings of Societies

Suggestions by the Conference Committee Regarding Training School for Licensed Attendants.

The Committee composed of representatives of the Medical Society of Virginia and the State Nurses' Association met in Dr. Hodges' office on the night of June 2, 1922, to consider the law enacted regarding Licensed Attendants.

The following ideas were agreed upon, which this Committee begs leave to submit to the State Board of Nurse Examiners for the use of any hospital desiring to establish a school for Licensed Attendants. The Committee voted:

(1) To go on record as favoring establishment of schools for Licensed Attendants, and approving the law passed by the recent Legislature.

(2) It recommends that the course be one year, of twelve months, all of which shall be served in the same hospital, at the end of which time, if the work has been satisfactory to the authorities of the hospital, the pupil will receive a certificate as trained attendant, which entitles the graduate to take an examination before the State Board of Nurse Examiners, which, if passed, entitles her to

a certificate of Licensed Attendant.

(3) Schools of this kind to be opened in any hospital of ten beds or more, but recommends that this course be not given in hospitals which are now conducting a successful school for regular trained nurses.

(4) A school of this kind must be supervised by at least one graduate nurse.

(5) Pupils must be between the ages of 18 and 45. giving evidence of good moral character, physically able, and a preliminary education equal to the eighth grade in the public schools.

(6) Classes may be formed twice each year, with one month probation period.

(7) Hospitals to furnish living expenses, uniforms, books and an allowance of not less than $5.00 per month.

(8) This Committee recommends to the physicians of the State of Virginia and the nurses of the State, and the public in general, that the pay for Licensed Attendants be not more than $18.00 per week.

(9) It is recommended that a special uniform be designed and copy-patented, and used throughout all the schools in the State, and used after graduation.

(10) The course of study to include the following:

1—Qualifications, deportment and personal hygiene.

2—General hygiene, care of the home, cleanliness, ventilation, sanitation, disposal of waste, germ theory, household and sick room.

3—Food, care and preparation, plain cooking for the family and the sick.

4—Ethics, etiquette of the sick room, adaptability to sick room and the family.

5—Every day care of the sick: Bed making, lifting, moving, rubbing, special arrangements for comfort, prevention of bed sores, cleansing and sponge baths.

6—Methods of disinfection and sterilization of utensils.

7—Temperature, pulse, respiration, observation of urines, defecations, record keeping, etc.

8—Treatment, enemata, douches, catheterization, fomentations, poultices, etc.

9—Giving of medicines, and instructions regarding antidotes for common poisons.

10—Care and feeding of children, well and ill.

11—Elementary nursing in maternity cases.

12—Special invalid cooking and serving of food.

13—Bandaging.

14—Emergencies, medical and surgical.

15—Text book recommended: Practical Home Nursing by Louise Henderson, R. N., Published by the MacMillan Co., New York City.

J. Allon Hodges, M. D.
Chairman.

R. C. Fravel, M. D.
Sect'y.

Richmond Va.
June 21, 1922.

The Norfolk County Medical Society,

At its annual meeting in June, elected Dr. Julian L. Rawls, Berkley, president; Dr. Chas. W. Doughtie, Norfolk, vice-president; and reelected Dr. Lockburn B. Scott, Norfolk, secretary-treasurer.

The Southside Virginia Medical Association

Met in Norfolk on Tuesday, June 13th, by special invitation from its members in that city. Dr. T. M. Raines, of Wakefield, presided.

About fifty were in attendance. The subject for general discussion was "Summer Diarrheas of Infants and Children." The program included also a number of other excellent papers. A most enjoyable feature of the meeting was the seashore dinner given by the Norfolk doctors at Ocean Park, after adjournment.

The Association will meet in Victoria, the second Tuesday in September.

R. L. Raiford, *Sect'y.*

Campbell and Roanoke County Societies Exchange Papers.

This spring, it was decided by the Roanoke Academy of Medicine and the Lynchburg and Campbell County Medical Society to annually exchange papers between the two Societies. In March, Dr. Robert Kelly and Dr. B. H.

Kyle, of this city, read papers before the Roanoke Academy of Medicine. On Monday night, June 5th, at a meeting of the Lynchburg and Campbell County Medical Society, Dr. J. D. Willis, of Roanoke, read a very interesting paper on "Signs and Symptons Suggesting Syphilis, Observed in Routine Examinations." Dr. W. W. S. Butler, Jr., of Roanoke, read a very interesting paper on "Some Lesions of the Bladder and Post-Urethra, Case Report; Lantern Slides." We had as guests in addition to Drs. Butler and Willis, Dr. Jos. T. McKinney and Dr. Claude Moore, both of Roanoke.

We feel that the idea of exchanging papers between the two Societies will bring the men of the profession in the two cities in closer contact. The plan, so far, is working well and it is probable that we will exchange these papers more frequently than annually.

J. R. Gorman,
Sec'y-Treas.

The Walter Reed Medical Society

Was organized in Gloucester County, Va., on May 20th, 1921. At this time, 42 physicians residing in the surrounding counties met to decide upon some plan to commemorate the life and character of that noblest of medical minds, Walter Reed. After mature discussion it was decided to organize and maintain a real live medical society to meet at least twice a year. The autumn meeting was held in Newport News in September of 1921 with an attendance of 102. Thus this society has passed from infancy to strong childhood and, while it is one of the best, it bids fair to be also one of the largest, its territory embracing a large portion of Virginia. To quote from the constitution "Licensed white physicians residing in counties adjacent, convenient to and including Gloucester, the birth place of Dr. Walter Reed, are eligible to membership."

The Spring meeting, from all standpoints the most successful, was held in Williamsburg, Va., on May 10th and 11th. The program was of the highest order and thoroughly practical, each paper being discussed. The attendance was the largest in the hostory of the society, representatives from eleven counties being present.

Among the visitors reading papers were Drs. Stuart McGuire, Graham, and Hutcheson, of Richmond, Drs. Hagner and Horgan, of Washington. Dr. Byrnes, of Baltimore, Dr. Beardsley, of Philadelphia, Dr. Payne, of Norfolk, and Dr. Longan, of Newport News, the latter representing the Dental Profession.

Adding to the joy of the occasion were the luncheons given by Dr. George Brown, Superintendent of the Eastern State Hospital, and Dr. J. A. C. Chandler, President of William and Mary College, on Wednesday and Thursday, respectively. An automobile trip to Jamestown Island and points of interest in and about Williamsburg was greatly enjoyed by all participating.

Officers for the ensuing year were elected with the following results—Dr. Rea Parker, of Smithfield, president; Dr. George Brown, of Williamsburg, first vice-president; Dr. E. T. Sandberg, of Cardinal, second vice-president; Dr. William Gwathmey, of Ruark, third vice-president; Dr. George Hankins, of Phoebus, fourth vice-president; Dr. G. L. Fosque, of Onancock, fifth vice-president; Dr. L. E. Stubbs, of Newport News, secretary-treasurer.

The time and place of next meeting was not decided upon, this being left to a committee to be arranged for at a later date.

The incoming president was requested by the members to appoint a committee to confer with the council of the Medical Society of Virginia relative to some form of recognition.

No account of the meeting would be complete without mention of and expression of appreciation of the hearty co-operation of the members of the profession residing in Williamsburg, Drs. Henderson, Brown and King, as well as of the active support of Dr. Chandler, the president of William and Mary College. The success of the meeting was due largely to the help of these men.

L. E. Stubbs,
Sec'y.-Treas.

Secretary's Announcement

Malpractice Insurance.

Many state societies provide malpractice insurance for their members at a cost ranging from four dollars to six dollars annually. The lowest rate quoted in this State now is fifteen dollars with the prospect of an increase this year to twenty-five dollars. This high rate is not so much due to the losses the companies

have suffered in Virginia but to the losses in other states. In the north and west, suits for alleged malpractice are much more common than in the south but policyholders in this section must pay their part of the general average of losses.

Other state societies have found that in offering their members this insurance at cost they have done as much to build up and maintain their organizations as through any other service. Members pay their dues more promptly, new ones are more anxious to join, while old members are careful to see that they do not allow their memberships to lapse. Such a plan for protecting the standing of the members lines up nearly every ethical practitioner in the State for the defense of the physician sued. The advantages briefly listed here are in addition to the large saving effected.

In order to present to the Society reliable statistics, your prompt co-operation is needed. Send to the office of the Medical Society of Virginia a report covering your experience during the past five years, i. e., 1917, 1918, 1919, 1920, and 1921. We want to know exactly what suits and comprises have cost you or your insurance company on your behalf during this period. Include amount of compromises, attorney's fees, court costs, jury awards, and all other expenses incurred. In case you have had not suits or losses of this kind please advise to that effect. It will not be necessary to get out an expensive questionnaire if you will send in the information here requested. A postal card will do.

G. H. Winfrey,
Sec'y.-Treas.

Book Announcements

A Practice of Medicine. By A. A. STEVENS, A. M., M. D., Professor of Applied Therapeutics in the University of Pennsylvania; Professor of Therapeutics and Clinical Medicine in the Woman's Medical College of Pennsylvania, Philadelphia. Octavo of 1,106 pages, illustrated. Philadelphia and London. W. B. Saunders Company. Cloth, $7.50 net.

For over two thousand years the dominant thought in medicine was to find a cure for the various disease processes. The modern ideal—based upon a simplified science—is to seek for and remove the cause and allow the patient to get well.

With a teaching experience of thirty years first in pathology, then in internal medicine, there is probably no man in America better qualified to write a book on practice that should accord with our present state of knowledge than Dr. A. A. Stevens. He is a good judge not only of what should go into a book but also of what should be left out. This new work is modest in its pretentions, practical in its presentations and is a striking record of those incisive methods that have made its author one of the really distinguished teachers of today. It will certainly prove a satisfaction to that large class of Doctors who want a strictly modern one volume book on practice.

H.

Symptoms of Visceral Disease. A Study of the Vegetative Nervous System in Its Relationship to Clinical Medicine. By FRANCIS MARION POTTENGER, A. M., M. D., LL.D., F. A. C. P., Medical Director, Pottenger Sanatorium for Diseases of the Lungs and Throat, Monrovia, Cal., etc. Second Edition. St. Louis. C. V. Mosby Company. Cloth. 357 pages with 86 text illustrations and 10 color plates. 8 vol. Price, $5.50.

Transactions of the American Pediatric Society. 33rd session. Edited by JOSEPH BRENNEMANN, M. D. Volume XXXIII. 386 pages.

Permanent T. B. Clinics.

There are now eight permanent tuberculosis clinics in Virginia, supported in whole, or in part, by the money realized from the sale of tuberculosis Christmas Seals. These clinics, or dispensaries, are in Albemarle, Augusta, Halifax and Wise Counties, and in the cities of Newport News, Norfolk, Petersburg and Portsmouth. Two of these clinics have only been running a short time, Halifax having begun this work March 1st and Albemarle May 1st.

The Virginia Tuberculosis Association receives monthly reports from the clinics and it is stated at their office that since the first of January 2,807 persons have received free examinations through these local dispensaries. Of these 747 were found to have active tuberculosis or to show suspicious symptoms of the disease, while 20 were arrested cases. The local organizations have sent 54 patients to the sanatoriums and, of the remaing 693 active or suspicious cases, 643 are taking home treatment under the supervision of the nurse in charge.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
G. H. WINFREY, Business Manager and Secretary-Treasurer.
AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 JULY, 1922 No. 4

Editorial

Lymphatics, Lymph and Lymph-Glands.

There is too little present-day consideration of the lymphatic system.* The relation of the lymphatics to the migration in the body of bacteria, and the intimate, but separate, relation of the capillary system of the blood vessels and the terminal formation of lymphatic vessels, and further, the connection between the blood fluid in capillary blood-vessels, the lymph-fluid in the fine endothelial lymph-vessels, and that elaborate but indefinite system of "tissue spaces," lapped with tissue fluids, is a composite question worthy of most careful thought and study. MacCallum, quoted by our authors, preceded by other workers, favors the view that the tissue spaces are not continuous with the lymphatics, but that the lymphatic system is a closed system of lymph channels, as the blood vessels are a closed system of blood channels, both systems sustaining intimate exchange relations to the tissue fluids in the tissue spaces. These authors' summary contains observations which we freely use in this connection. They observe that the lymphatics form a closed system of vessels lined by epithelium; that the term "lymph" should properly be used to designate the fluid found in them; that the tissue spaces are not directly continuous with lymph capillaries. The lymph may or may not be of the same nature as the fluid in the tissue spaces. The lymphatics are more restricted in distribution than the blood vessels and are concerned in the absorption and conveyance of solid particles and substances insoluble in water. For instance, soluble substances enter the blood vessels while insoluble material, like Indian ink or carmine, when injected into the loose connective tissue, spreads through the tissue spaces and "many of the solid particles are eventually carried into the lymphatics in the cytoplasm of cells which pass through the walls of the lymphatics by diapedesis."

Passing through the endothelium of the lymphatic wall in the protoplasm of the white cells, and lodging in the first lymph glands, the "cells carrying solid particles pass from the lymph sinuses of the gland into the lymphoid tissue at the cortex and medulla of the gland and eventually among the lymphocytes in these situations." It is interesting to note that solid particles or even red blood corpuscles coming to the gland from the lymph stream are enmeshed in the reticulum of the lymph sinuses. The lymph gland is thus, it is observed, an extremely efficient filter. It allows solid particles to pass through only when there are too many or when the gland structure is disorganized. So, it is seen that the lymphocytes of the lymphoid tissue act as a mechanical barrier which is eventually made more complete by the formation, as time goes on, of fibroblasts and fibrous tissue. While the foreign material is fixed in the gland, the lymph sinuses are open for the circulation of the lymph.

Bringing the above observations to bear upon the development of tuberculosis in the lymphatic system, our authors say that "the history of the tubercle bacillus in the early stages in the body is identical with that of solid particles such as Indian ink or carmine."

The bacilli enter the lymph stream by the phagocytic cells. They are deposited in the first lymph gland; and there, in the lymphoid tissue, some of the bacilli are destroyed and some, retaining vitality, multiply and produce what is known as a tuberculous focus in

*Observations on the Lymphatics and Lymph Glands, etc. P. T. Herring, M. D., F. R. C. D., Edin., and F. G. MacNaughton, M. D., Edin., D. T. M. & H. From the Physiology Department of the University of St. Andrews. etc.

the lymphatic gland. The action of the lymph gland upon tubercle bacilli results in the liberation of toxins in the lymph-fluid and, in turn, excites an active lymphocytosis "in other glands through which the lymph passes." Preceding tubercle bacilli, toxins, thus, render the uninfected glands "less pervious" by narrowing the lymph sinuses and over-filling them with lymphocytes.

Our readers are referred to the original articles for a more extended dissertation upon the interesting relation of the lymphatics and lymphatic glands in the absorption of foreign particles and tubercle bacilli, to say nothing of the enlightening discussion of other phases of the lymphatic system.

HOW DOCTORS MAY BEST HELP RELIEVE THE SHORTAGE OF NURSES.

"If every physician in the state will look his responsibilities in this matter squarely in the face and attempt to get one of the best educated, best bred and most capable women in his county interested in nursing right away, he will be performing a great public service."—(Ky. Medical Journal.)

Hyperthyroidism.

The doctor of to-day who fails to note the progress that is being made in the study of the functionation of the thyroid gland, particularly in the hypo- and hyper- phases of its activity, is, indeed, permitting one of the most important fields of progressive medicine to escape him. Really, the discovery of late or advanced cases of hyperthyroidism, as displayed in the well-known syndrome called Graves' disease, or the recognition of the signs of the sluggish or absent thyroid function, as evidenced by that dense and gross change in the body, denominated myxoedema, is not at all the sort of conception of the abnormal activity of this gland desired here to be commented upon. But it is of that rather large group of cases standing between the normal and grossly abnormal, we wish to comment upon at this time.*

Over-activity of the thyroid is prone to occur in young women about the time of puberty and during early married life. Whether it is, at this time, more liable to excitation from the association of the newly developing sex glands or the over-stimulation of that group of endocrines by the marriage relation or sexual contacts, or whether it is more liable to be thrown into hyperactivity by infections, food or drink, we do not here attempt to say. But it nevertheless remains true, as a general proposition, that the beginning hyperthyroidism is related to the changes of life as seen in the advent and climacteric of the sex-organs, and there is a large distribution or incidence of hyperthyroidism among the excitable persons daily going about under the classification of high-strung people.

If one were attempting to classify for discussion the type of hyperthyroidism from the simple to the gross and advanced forms, the following may be given: (1) simple hyperthyroidism; (2) toxic adenoma of the thyroid with hyperthyroidism; and (3) exophthalmic goitre or Graves' disease. The occurrence of the third and second groups is recognized by the obtrusive symptoms of struma, tremor, exophthalmos, tachycardia, etc., but the beginning disturbance or disorder of the gland, without appreciable or gross enlargement, is the matter of extra importance, because it is at this time that the state may readily be brought into abeyance and possibly the etiologic factors in the case successfully eliminated.

For this purpose and with a view to this end, it becomes important for physicians to acquaint themselves with the newer lines of investigation that have for their application the early detection of states of over- and under-function of the thyroid gland.

So it is that an early detection of abnormal thyroid activity may be secure by intelligent observations upon the basal metabolism rate. As yet, the accurate determination of the basal metabolism rate is a more or less difficult and intricate process; there is little doubt that, before very long, simplicity will assert itself in the mechanism of this instrument and it will become more quickly accessible to the use of the busy practitioner. For the present, however, cases that indicate the probabilities of hyperthyroidism should be tested out by one skilled in the determination of the basal metabolism, if an early discovery

*A British Medical Association Lecture on "Hyperthyroidism," by George R. Murray, M. D., D. C. L., F. R. C. P., Professor of Systemic Medicine in Victoria University and Senior Physician to the Manchester Royal Infirmary. British Medical Journal, June 10, 1922.

is to be made of that hyperthyroidism which is amenable to simple treatment.

In hyperthyroidism, there is an increased heat production and metabolism. The consumption of the standard body of oxygen and the determination of carbon dioxide production is an index of the basal metabolic rate which is calculated in percentage at, above, or below the average normal rate. For instance, it has been found that in mild cases of myxoedema the basic rate is from —20% to —40% of the normal rate, while in slight cases of over-thyroid activity, the metabolic rate may vary from +20% to plus +40%, and in Graves' disease, the rate may reach from +60% to +100%.

In addition to the detection of this condition, there is a decided advantage to be gotten in the frequent determination of the basal metabolism as an accurate means of estimating the progress of the patient's condition, while in under-treatment. Here for one treating a case of myxoedema with a rate —20% it would be extremely interesting and enlightening, in connection with the improvement of any gross clinical symptoms of the disease, to know by definite measurement and calculation that the gland presiding over the metabolic rate of the body was approaching a normal activity. Likewise, in a case of hyperthyroidism, with an improvement and even disappearance of gross signs of hyperthyroidism, it is extremely helpful to note that the metabolic rate is reduced and is maintained there.

HOW DOCTORS MAY BEST HELP RELIEVE THE SHORTAGE OF NURSES.

"If every physician in the state will look his responsibilities in this matter squarely in the face and attempt to get one of the best educated, best bred and most capable women in his county interested in nursing right away, he will be performing a great public service."—(Ky. Medical Journal.)

U. S. P. Doses Proposed.

The attention of our readers is called to the report of the Sub-Committee on Posology of the United States Pharmacopeia, Tenth Revision, which is found under the heading of The Truth About Medicine, in this issue.

Every physician is interested in the matter of dosage. The use of exactness in dosage and the physiological effect of drugs in the diseased body go hand in hand. The revision of the Pharmacopeia is one of those important ten-year events which should engage the interest of every active practitioner.

HOW DOCTORS MAY BEST HELP RELIEVE THE SHORTAGE OF NURSES.

"If every physician in the state will look his responsibilities in this matter squarely in the face and attempt to get one of the best educated, best bred and most capable women in his county interested in nursing right away, he will be performing a great public service."—(Ky. Medical Journal.)

Conference Report on Trained Attendants.

Attention of readers is called to the report of the Conference Committee on one of the important phases of the nurse-situation. This interesting report may be found in this issue in the department of Proceedings of Societies.

Every physician in this State is vitally related to this problem and should give the work of this Committee his serious consideration.

News Notes

University of Va., School of Medicine, Finals.

Commencement exercises of the Medical Department were held in conjunction with those of the various other departments of the University, June 11-13, inclusive. A number of entertainments were enjoyed by the graduates. At the meeting of the General Alumni Association, on the 12th, Drs. W. H. Goodwin, University, and Hugh H. Young, Baltimore, former medical graduates, were named on the executive committee. The annual alumni luncheon was held the same day and that evening President and Mrs. Alderman tendered a reception to the Alumni and graduating classes. The conferring of degrees took place on Tuesday afternoon, following which there was a reception for the graduates and their friends, and later a ball. At class day exercises, a twenty-year endowment life insurance policy for $5,000 was presented to the Univer-

sity of Virginia by the 1922 graduates from all the departments.

There were twenty graduates in medicine. these hailing from seven different states, the District of Columbia, and one from India. This year also had the distinction of having the first woman graduate in the medical department.

The following is a list of the graduates in medicine with hospital appointments:

University of Va. Hospital—Drs. Sara Ruth Dean, Greenwood, Miss.; Isaac Long Harshbarger, Port Republic, Va.; Bayard Taylor Horton, Gate City, Va.; William Jacob Norfleet, Suffolk, Va.; Miles Parker Omohundro, Farmers Fork, Va.; and William Henry Clay White, Elizabeth City, N. C.

St. Luke's Hospital, New York City—Drs. John Throckmorton Bate, Jr., Louisville, Ky., and Charles Bruce Morton, Alexandria, Va.

Church Home Infirmary, Baltimore—Drs. Albert Austin Pearre, Frederick, Md., and Louis Joseph Richman, Newport News. Va.

Sarah Leigh Hospital, Norfolk, Va.—Dr. Walter Paul Adams, Norfolk, Va.

Chester Hospital, Chester, Pa.—Dr. Estes Caskie Kidd, Lovingston, Va.

General Hospital, Madras, India—Dr. Arthur Gronan Noehren, Madras, India.

Mass. General Hospital, Boston—Dr. Edward Jacob Ottenheimer, Willimantic, Conn.

Johns Hopkins Hospital, Baltimore—Dr. Alfred Rives Shands, Jr., Washington, D. C.

Orange Memorial Hospital, Orange, N. J. —Dr. Floyd Reeves Smith, University, Va.

U. S. Marine Hospital, New Orleans, La. —Dr. Robt. Glass Vance, Jr., Waynesborro, Va.

Dr. Russell Watson Roberts, Faber, Va., accepted no appointment at this time.

Dr. Charles Calhoun Hedges, Marietta, Ga., was appointed instructor in Anatomy at the University of Virginia; and Dr. Frank Helvestine, Jr., Roanoke, Va., was appointed instructor in Pathology, at the University of Virginia.

Medical Society of Virginia.

The Executive Council of the Society met in June and decided that the Norfolk meeting of the Medical Society of Virginia should be held October 31 to November 3, inclusive. Dr. R. Lloyd Williams, 405 Taylor Building, Norfolk, is chairman of the Local Committee of Arrangements.

Now is the time to begin planning attendance upon this meeting and to decide about the reading of papers. Norfolk doctors wish to make this the "biggest meeting" ever.

Public Health School at Harvard.

It is announced that a new school of Public Health is to be opened at Harvard University in September. It is the outgrowth and continuation of the school which has been jointly conducted by Harvard and the Massachusetts Institute of Technology since 1913, and will be closely associated with the Medical School of Harvard. Dr. David L. Edsall, dean of Harvard Medical School, will also serve as dean of this Public Health school, and the faculty is composed of representative men.

Dr. and Mrs. Beverley R. Tucker,

Richmond, enjoyed a visit to some of the principal Canadian cities, when he attended the American Psychiatric Association in June.

Dr. Henry M. Snead

And family, of South Hill, Va., recently paid a visit at the home of his mother at Fork Union, Va.

Lockley P. Hening Hurt.

As we go to press, we are informed that there is a slight improvement in the condition of Lockley P. Hening, son of Dr. Thos. S. Hening, of Jefferson, Va. Mr. Hening, who is a senior student at the Medical College of Virginia, was injured in a saw mill accident near his home about the middle of June.

Honor for Dr. Gwathmey.

At a dinner in his honor, by the American Association of Anesthetists, in St. Louis, last month, Dr. James Tayloe Gwathmey, of New York City, was presented with a silver loving cup, in recognition of his services for the past ten years for advances in the research, practice and literature of anesthesia.

Medical Arts Building

Is the name to be given to the new physicians' building, shortly to be erected on Franklin Street, this city. Possession of the property will be obtained about August 1, and construction will be commenced at once. Drs. Karl Blackwell, L. T. Stoneburner, R. H.

Wright and E. H. Terrell, all of Richmond, are the incorporators of this project.

Miss Celia Brian, R. N., Honored.

Miss Celia Brian, for the past twelve years superintendent of the Danville, Va., General Hospital, has tendered her resignation to accept the superintendency of a large hospital in Vermont, her native State. Just before leaving, the ladies' society working for the hospital, presented her with a silver loving cup.

Dr. George B. Fadeley,

East Falls Church, Va., has been elected one of the trustees of the Leeway Citizen's Association, of Arlington County, Va., which has voted to purchase a lot and erect a new community building.

Dr. and Mrs. L. F. Hansbrough

Have returned to their home in Front Royal, Va., after a visit to Baltimore.

Dr. W. A. Plecker,

State Registrar, in June visited his former home at South Hill, Va., after an absence of ten years.

Dr. J. M. Shackelford,

Of Martinsville, Va., visited this city, early in June.

Dr. Powell Garland Dillard,

Of the class of '20, University of Virginia, Medical School, who is house surgeon at Post-Graduate Hospital, New York, has recently been on a visit to his former home in Lynchburg, Va.

The Virginia Pharmaceutical Association,

At its annual meeting at Natural Bridge, in June, elected H. E. Orchard, Lynchburg, president, and A. L. I. Winne, Richmond, secretary.

Dr. D. R. Murchisonn,

Who, for several years, has been located in Richmond, has moved to Wilmington, N. C., where he will continue the practice of his profession.

Dr. Bruce Clark

Has moved from Pulaski County, Va., to Winifrede, W. Va.

Dr. Percy Harris,

Who was recently appointed City Physician for Lynchburg, Va., resigned the position and decided to remain at Scottsville, Va.

Dr. Dean B. Cole,

Formerly of this city, after a short time at Chilhowie, Va., has gone to Trudeau, N. Y.

Dr. Chas. W. Putney,

Of the class of '21, Medical College of Virginia, has returned to Richmond, after a year at Grace Hospital, New Haven, Conn. He is at 206 N. Allen Avenue.

Dr. George W. Parrott,

Of Charlottesville, Va., was a recent visitor at his former home, Fork Union, Va.

Czechoslovak Hospital for Chicago.

At a recent meeting in Chicago of American citizens of Czechoslovak descent, plans were laid for the erection of a Czechoslovak hospital. For this purpose, $30,000 has already been collected and a considerably larger sum pledged. The purpose is to provide a hospital where Czechoslovakians may have the advantage of attention from doctors and nurses who understand and speak their own language.

Tonsil and Adenoid Clinics.

Four Tonsil and Adenoid Clinics have been held in Southampton County, Va., this spring, one each at Courtland, Boykins, Sedley and Franklin. One hundred and fifty-four patients were operated on at theese clinics, all of whom showed beneficial results. Over sixty per cent of the school children were found to have defective tonsils or adenoids. The clinics were held under the auspices of the county branch of the Red Cross, the Southampton County Medical Society, and various local organizations. The operating surgeon was Dr. J. B. Rawlings, formerly of Staunton, but now with the State Board of Health. He was assisted by Dr. R. L. Raiford, of Sedley, and two trained nurses. Other local physicians were in constant attendance.

Married.

Dr. John Kirk Richardson and Miss Irene Trotter Geisinger, both of Richmond, Va., June 12.

Dr. Austin Ingram Dodson, Richmond, and Miss Louise Barham, Emporia, Va., June 6.

Dr. Carlisle Callahan Cochran, Huntersville, N. C., and Miss Adelia John Everette, June 6. Dr. Cochran graduated from the Medical College of Virginia last year, at which time he was appointed an interne to Virginia Hospital, Richmond. They will make their home in this city.

Dr. James Alexander Waddell, University, Va., and Miss Mary C. Graves, Somerset, Va., June 27.

Dr. Parks M. King, Charlotte, N. C., and Miss Anna Howerton, Lexington, Va., June 27.

Commission on Mental Health.

Governor Trinkle has appointed the following as members of the Commission on Mental Health, which commission was created by an act of the last General Assembly:—Dr. S. C. Hatcher, Ashland, chairman; Frank Bane, Richmond, secretary; Dr. Thomas S. Hening, Jefferson; Dr. W. D. Prince, Stony Creek; Charles A. Osborne, Richmond; Dr. W. F. Drewry, Petersburg; Dr. A. S. Priddy, Colony; Dr. Ennion G. Williams, Richmond; Harris Hart, Richmond; Dr. Paul V. Anderson, Richmond; and Miss Annie Mann, Petersburg.

Dr. I. S. Stone,

Of Washington, D. C., is visiting various points of interest in the Pacific States. He is accompanied by his family and will return home about August the 1st.

Drs. Deaver and Marshall Retire.

It is announced that Dr. John B. Deaver and Dr. John Marshall will retire this summer from the teaching staff of the University of Pennsylvania, owing to age limitations. In this institution, retirement from the teaching staff is optional between the ages of 65 and 68 and compulsory at 68. Both of these physicians have been associated with the University for more than forty years, Dr. Deaver as John Rhea Barton professor of surgery, and Dr. Marshall as professor of toxicology and chemistry.

Dr. E. S. Lester,

Of Witt, Va., has been appointed an examining physician by the Norfolk and Western Railway, and has moved to Bluefield, W. Va.

Dr. W. M. Minor,

Of Comorn, Va., has been elected president of the Board of Directors of the Bank of King George, Va.

Dr. A. C. Lancaster

Has been elected a member of the City Council of Martinsville, Va.

Dr. Stuart McGuire,

Richmond, was one of the five men appointed by the Governor, to complete the personnel of the new war memorial commission, created by terms of a resolution adopted during last session of the General Assembly.

Dr. Robert P. Kelly,

Lynchburg, Va., announces that in the future his practice will be limited to obstetrics. His offices are at 705 Church Street.

To Work for Welfare of Mothers and Children.

Dr. Ethel M. Watters, of San Francisco, has been appointed consultant in the administration of the Sheppard-Towner Maternity Act. Since 1919, she has been Director of the Bureau of Child Hygiene in the California State Board of Health, and is a well-known pediatrician. Dr. Watters becomes a member of the staff of the Federal Children's Bureau, which is charged with the duty of administering in co-operation with the States the Federal funds appropriated for promoting the welfare and hygiene of maternity and infancy.

All but six of the States have to date accepted the provisions of the act. In most States the administration will be in charge of the child hygiene divisions of the State boards of health. Plans under which the individual States will administer the funds locally vary with local needs and resources.

Annual Physical Examinations Urged.

Dr. Herman M. Biggs, Commissioner of Health of New York State, in opening the joint annual conference of Sanitary Officers and Public Health Nurses of New York, urged an annual physical examination of every man, woman and child in the State as a health measure of the first importance. He further called attention to the fact that "the unselfish devotion of the doctor as health officer to the higher good of the community which he serves" has not received the recognition it should.

Doctors Interested in County T. B. Work.

A number of tuberculosis associations are being organized in counties throughout Virginia and active interest is being shown in their work.

Dr. Rea Parker, Smithfied, has been elected chairman of the association in Isle of Wight County and Dr. Clarence M. Nicholson, of Charlotte C. H., of the one in Charlotte Comty.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examination August 9, 1922, for junior microanalyst. Any one interested may secure further information from the Commission.

Location Wanted

Protestant graduate of Medical College of Virginia in 1907, aged 40, who has been doing industrial work since graduation, wants a location in Virginia, in some. good small town. Must be in a good community, with good schools and good roads. Will not object to doing some rural work on good roads and among a good class of people. Available about September 1st. Address No. 154, care this journal. (Adv.)

Wanted—

A doctor to locate in a small town about .5 miles from Richmond. Will guarantee at least $150 a month. For information, address P. O. Box 395, Richmond, Va.

Obituary

Resolutions on Death of Dr. Taylor.

The following preamble and resolutions were adopted at a meeting of the Richmond Academy of Medicine and Surgery held on the 13th ultimo.

WHEREAS, The Richmond Academy of Medicine and Surgery has learned of the death on May 30, 1922, of Dr. Hugh McGuire Taylor, who was for many years one of its most active members and at one time its President, and,

WHEREAS, In the passing of Dr. Taylor there has been removed from its midst one of the ablest surgeons the medical profession of Richmond has known, —a wise counsellor, a true friend, and a Christian gentleman of the highest type, be it

RESOLVED, That the Richmond Academy of Medicine and Surgery bows to the will of an all-wise Providence, but expresses its profound sorrow at the loss it has sustained. and, be it further

RESOLVED, That these resolutions be spread upon the minutes, that a copy be forwarded to the bereaved family, and that they be published in the VIRGINIA MEDICAL MONTHLY.

ALFRED L. GRAY, *Chairman*
VIRGINIA HARRISON
E. H. TERRELL.

Dr. Reuben Lindsay Robertson,

Of Charlottesville, Va., died at his home in that city. June 5, aged 62 years. Upon completing his academic education at Virginia Military Institute, he entered the University of Virginia, from which he graduated in medicine in 1882. He at once entered the medical branch of the U. S. Army, and saw service in various sections of the country for a period of over twenty years. At the time of his death, he was city physician of Charlottesville, a position which he had held for several terms. His wife and six children survive him.

Dr. William Logan Dunn,

Of Glade Spring, Va., a prominent physician of Southwest Virginia, died at his home June 26, at the age of 84 years. Dr. Dunn received his academic education at Emory and Henry College and graduated in medicine from the Medical College of Virginia in 1863. He enlisted in the Confederate service during the War Between the States as a private and later performed medical services. Immediately after the war, Dr. Dunn located at Glade Spring and continued actively at work there until about six months ago. He joined the Medical Society of Virginia in 1874 and became an honorary member in 1906. For more than forty years he was one of the local surgeons of the Norfolk and Western Railway. He was twice married and is survived by his last wife. The funeral was conducted with Masonic honors.

Dr. Sampy Davis Hatfield.

Formerly of Iaeger, W. Va., but for the past year located in Kokomo, Ind., died June 2, from a bullet wound, accidentally inflicted by the revolver of a police officer, who was in his office professionally. The policeman reached over to pick up something which had fallen to the floor when his revolver fell out of his pocket and discharged its contents in the left side of the physician, just above the hip. Dr. Hatfield was 41 years of age and was graduated from the Louisville Medical College in 1906. H ewas a member of a number of medical societies and fraternal organizations.

Fifty-third Annual Session, Norfolk, Va., Oct.31-Nov.3, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 5.
WHOLE NOo. 842

RICHMOND, VA., AUGUST, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE AFTER-CARE OF ABDOMINAL SURGICAL PATIENTS.*

By O. T. AMORY, M. D., Newport News, Va.

INTRODUCTION.

In studying more closely the after-treatment of surgical patients, I decided to limit my paper to abdominal cases; even in so doing it will be impossible to cover the subject in such short time.

The after-care of abdominal surgical patients may be divided into hospital or immediate, and post-hospital or ultimate. The hospital or immediate care commences with the closure of the wound. The surgeons should see that the patient is gotten safely back to his room, the nurse in attendance should be properly instructed, not only as to the fundamentals concerning the patient's condition but, in addition, as to special dressings, appliances, etc., so they may be properly protected while the patient is reacting. During the period of reaction and after effects of anesthesia, I am confident that the tendency is to over-treat the patient, but if we will stop and consider the anatomical and pathological, as well as physiological condition existing, we will come to a conclusion that the least done the better in the majority of cases.

According to Dr. J. F. Herrick (*Illinois Medical Journal*), normal peristalsis results from impulses sent through the autonomic nervous system. This consists of three segments; the upper (cranial) and lower (sacral) promote active peristalsis, while the central (sympathetic) tends to restrain these activities. It has been established that strong emotion, peritoneal inflammation, severe pain, exposure and handling of viscera all tend to inhibit the cranial and sacral division and at the same time to stimulate the sympathetic. The degree of inhibition and stimulation is governed by the susceptibility of the patient and extent of injury sustained. The inhibition is present for awhile following all abdominal operations, and seems to be more marked on those organs supplied by the cranial division and is evidenced by dilated pupils, dry mouth, absence of gastric juices, inhibition of peristalsis and vesical contractility; and, at the same time, stimulation of the sympathetic closes the pylorus, contracts the vesical sphincters, stimulates the adrenals, accelerates the heart, etc.

In other words, the normal balance between the opposing divisions of the autonomic system is for the time being disturbed. In the average post-operative case, complete rest will result in a day or two in the resumption of functions by the autonomic system, manifested by a return of pupils to normal, of salivary and intestinal secretions, lowered pulse and a sense of general improvement. At this time, a general laxative followed by an enema is all that will be required.

Should reaction be delayed by peritonitis or trauma, nature can be assisted much more safely by proper doses of opiates which, by lessening the transmission of harmful impulses, aids the central nervous system in sooner regaining control so the cranio-sacral divisions may resume normal action and the sympathetic be quieted. The bowels may now be moved by gentle means. Very active cathartics, especially early, irritate the stomach and bowels and thus increase the evils.

In addition to being an inconvenience and an extremely annoying symptom, nausea and vomiting increase the tendency to acidosis, by interfering with the patient's nutrition. The stagnated, putrefied, infected material in the stomach is a great factor in lowering the

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

tonus of the gastric musculature, thus predisposing to acute dilatation. For the relief of this condition, the stomach pump should be resorted to early and as often as is necessary to completely empty it of all poisonous materials. The hot water bag is very useful in controlling nausea. Turning the patient on the left side, thus relieving the strain upon the cardiac orifice, is often beneficial. Other well known means may be employed when indicated.

Hiccough is a very distressing symptom and often proves to be a dangerous signal, especially in the aged. Relieving the stomach of infected material by the stomach pump, and introduction of aqueous solutions, will quite often relieve it. If not, benzol-benzoate is of advantage. In desperate cases, cautious use of opiates may be required.

Fowler position in peritonitis should be maintained until nature has established its fortification to the invading infection, usually about forty-eight hours. After this time, it is not usually necessary and its discontinuance is more comfortable to the patient.

The colon should be relieved of gas by the introduction of the rectal tube or stimulating enemas, milk sugar ten per cent. (one and one-half ounces to pint), added to the enema has a tendency to combat acidosis, which is present more or less after all profound anaesthesias. It also prevents intestinal putrefaction and toxemia. Other ingredients of enemata which are very beneficial are alum, turpentine, etc. Pituitary extract (S) is of advantage here by stimulating the cranio-sacral division; it should not be administered too early, as its action is better when nature has partially recovered her equilibrium. Drastic purgation in the preparation of the case for surgical operations adds many evils to the convalescence of the patient, especially the first few days following anaesthesia. Quite frequently stimulating enemas with proper pre-operative diet are sufficient.

Surgical shock should be prevented before it occurs, by proper protection of the patient before, during, and after operation. For the control of same after it occurs, the following is indicated: (1) Apply heat, sustain the heart, and stimulate the nervous system; (2) Replace the amount of blood lost as from hemorrhage; (3) Suppress the toxic focus as quickly as possible.

The diet in post-operative cases and also, I believe, in medical as well as surgical cases, is notoriously neglected. We naturally assume that the routine hospital diets are suitable for all cases, and often we are over-cautious about feeding our patients too early after an anesthetic for fear of producing gastric distress. This precaution has its virtues, but often it retards rather than hastens the desired results, especially should the patient develop some long, drawn-out complications. Quite frequently the patient has been suffering from starvation for some time before he comes to operation, and very often the operation itself is for the relief of this particular symptom. Food is extremely important and should be given cautiously, just as soon as patient stops vomiting. Food is a most important regulator of metabolism; properly assimilated, food furnishes material upon which the cell works in the performance of its own function and repair of its own structure. If the cell does not have sufficient material to meet its demand, it must draw upon its own tissues. Food alone is the source of energy for the body. Furthermore, food furnishes a physiological stimulus to the living cells. The rapid loss of strength and endurance as result of fasting and the marvelously rapid restoration of energy by appropriate nourishment afford ample evidence of this fact. Due to the enormous amount of waste material accumulating from a protein diet, meats and proteins in general should be greatly reduced or eliminated immediately before and after all operations and instead a diet rich in lactocereal and carbohydrates should be instituted. Food often acts so as to relieve pain, especially the hunger pain of stomach surgery. It has a laxative effect. Food is by far less irritating than the acid putrefied material vomited by patients after anaesthesia. Gruel diet, fruit juices and vegetable broths are ideal for the first day or so after anaesthesia. Wound infection is due in great part to low resistance of tissue as well as introduction of pus-forming organisms in the incised area. Food adapted to the case often lowers or prevents this troublesome complication. Abundance of water is essential after operations, three or four quarts daily, subcutaneously, intravenously, or per rectum, if the patient cannot retain it by mouth. Abundance of fresh air, rather early, systematic, and progressive exer-

cise is very beneficial to the patient and should be indulged in as early as is consistent with the case.

Surgical drainage in the past has been a subject much discussed and many different materials for this purpose have been utilized. At the present time the old saying, "when in doubt drain," has been changed, so now when in doubt we usually do not drain. The latter is by far the wiser. It is marvellous the amount of infected material the peritoneal cavity will take care of. The best drainage material is soft rubber tubing of large calibre, cigarette drain, or rubber dam. The first mentioned is preferable, especially in the abdominal cavity or cavities in general, but care should be taken in making slits and holes in it not to have them above the level of the fluid. They should be removed as soon as consistent, usually in about forty-eight hours, and, if necessary, a wick of dam or small catheter introduced for a few days longer. Of course, this does not apply to special drainage, as gall-bladder, for instance. Irrigation of pus cases is of great benefit, but should not be instituted until nature has properly walled off the infection, as otherwise the infected material will be disseminated to non-infected areas. Care should be utilized not to produce trauma to the recent delicate structures formed. Irrigation should be discontinued as soon as the bulk of infected material has been removed. There is properly little choice between wet and dry dressings; personally, I prefer the latter. Infected or gaping wounds should be dakinized and secondary sutures introduced.

Post-operative recumbency is a matter for individual judgment. In my opinion, the modern surgeon allows his patients to arise too early. There are certain facts that should be taken into consideration, viz., age of patient, site and extent of incision, complications, the condition and nature of the wound. In certain incisions, such as the gridiron, for instance, early rising strengthens the wound. But in other incisions, when the intra-abdominal pressure will be greater than the extra-abdominal, erect posture will put extra tension on the wound. A safe procedure, usually, is to maintain the recumbency until a firm cicatrix is formed in the scar. This will vary in different individuals. Secondary suture hastens naturally the period of recumbency.

Focal infections should be an issue in every surgical case. The teeth, tonsils, uterus, prostate, genito-urinary tract and elsewhere should be eliminated before operation and investigated frequently in the after-care, especially the cases not doing so well. The ever presence of syphilis should be borne in mind, and the environment of your case should have no bearing on its investigation. The patient's mouth should receive very careful attention at all times, more especially in post-operative cases. The services of the dentist should be sought in doubtful cases. The genito-urinary tract should be checked up quite often, as frequently nephritic conditions follow operations, not only from the anaesthesia but from the escape of locked-up infection into the blood stream during the trauma of surgery, and especially the direct trauma to the kidney and adnexa themselves.

Transfusion is a decided step forward in the treatment of surgical as well as medical cases, and is indicated in (1) acute infections, as septicaemia, peritonitis, etc., (2) chronic conditions, as tubercular perionitis, tubercular hip disease, osteomyelititis, etc., (3) hemorrhage, (4) disturbances of the endocrine series when other means fail. It is a benefit, especially in children, when you have enlarged spleen, marasmus, and a general debilitated condition, giving usually fifteen c.c. per pound of body weight.

Constipation, the bugbear of modern civilization, is quite frequently more obstinate after surgical procedure, due partially to the break in one's routine, recumbency, disturbances of metabolism, improper food, dehydration of the tissues, adhesions, certain appliances, etc. It should be prevented before it occurs. After it is established, it is a matter of re-educating not only the gastro-intestinal tract, but the patient *in toto* as well.

The comfort of the patient should be paramount in each case. Attention to little details most always makes grateful patients, such as properly-fitting, snug bandages, as the many-tailed binder, bridging of the testicle in hernia and varicocele operations, frequent changing of soiled dressings, comfortable beds, etc. Abdominal binders in general do more harm than good. They should only be used in the obese post-operative hernias, multiparous, and when especially indicated.

The slightest variation from normal con-

valescence should be immediately and thoroughly investigated. This is usually indicated by rise of temperature, probably chill, pain, etc.

There are other phases of post-operative care too numerous to mention in the limited time of this paper, but there are a few things one should mention in passing; such as artificial menopause or other disturbances of the female organs. We are often too prone to overlook the marked disturbances produced by the removal of the female organs. There is a certain strain of symptoms produced in all gynecological operations varying in intensity. In these cases, we should inform the patient as to what to expect and introduce appropriate measures to control them, always bearing in mind that the therapeutic test is the only way of determining the amount of internal secretion needed in each individual case. With the judicial use of the various preparations of the endocrine series, the dysharmony of the endocrine system can be re-harmonized, and a great many of the nervous symptoms following gynecological operations prevented.

Individualization of each surgical case should be sought.

Allaying of erroneous, harmful impressions should be emphasized, as quite often patients go through the various stages of a simple operation with a great deal of fear, quite frequently unfounded, because they had been told that they had heart trouble or some other psuedo-malignant condition. Quite often this impression was left in all seriousness, but is due to ignorance of the exact condition existing or a lack of study of the case. I do not mean to minimize the seriousness of surgery, but simply to request a more cautious investigation of each abnormality, especially of the heart before the death sentence is sounded to the already pseudo-neurasthenic.

In conclusion, I wish to emphasize the necessity for a closer co-operation between the surgeon and the internal medical man. This is essential for the welfare of the majority of our patients. Each surgical patient should be given the benefit of a complete follow-up record in detail, composed jointly by the surgeon and the internist.

113 *Thirty-first Street.*

ORGANIZATION AND FUNCTIONING OF THE MEDICAL DEPARTMENT OF A DIVISION.

By GEORGE PEED, Lt. Col., M. C., U. S. A., Fortress Monroe, Va.

Conservation of Man Power.

Until somewhat recently the history of wars showed that Army Medical Officers were utilized as humanitarians.

As medical science developed it was found practicable to utilize it in the conservation of man power, and this factor alone being of such great importance to an Army, a more extensive and important status was required for the medical service.

The War Department has defined *doctrine of war* as follows: "It is the theory of the use of the Nation's force under particular conditions and is based upon the national characteristics and resources. Decision to go to war having been made, operations will be carried into hostile territory, and every resource of the Nation, mental, moral, and physical, will be utilized to bring about a definite, speedy, and successful conclusion."

From this definition it will be seen that the utilitarian view is paramount.

Tactical Knowledge Required.

The application of medical knowledge to the best advantage, in active campaign, requires a knowledge of the science and art of war, as we are working under war conditions, and, from the very nature of the activities, is deprived of the conveniences with which we are accustomed to work, besides being restricted in our efforts on account of the existing military necessities.

Tactical and strategical situations are worked out in advance, and the plan of the medical service should be prepared with equal knowledge and care as those plans prepared for the combatant arms and, on account of the wide dispersion of its activities, the task of proper functioning of a medical regiment, with a division, requires most able leadership on the part of its commander, "The Division Surgeon."

Infantry Division.

In order to visualize what we are dealing with, it will be advisable to consider briefly the infantry division.

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

A division is a self-contained organization both for tactical and administrative purposes. It possesses the different arms and supplies for any ordinary emergency. It forms the basis for army organization.

A division consists of 905 officers and 18,992 men, a total of 19,897 troops.

The gross components of a division are:

Division headquarters.

Special troops.

Two infantry brigades of two regiments each.

One artillery brigade of two regiments of field artillery.

One engineer regiment.

One medical regiment.

Division air service.

Division trains.

The medical service functions both for men and animals, and is divided into two classes:

1st. Those medical troops attached to regiments and other smaller organizations of the division.

2nd. The medical regiment which is commanded by the Division Surgeon.

Attached Medical Personnel.

The attached medical troops are under the command of the organization commander to which they are attached, and they always function for and accompany their respective organization.

The total attached medical personnel with a division are 55 Medical Officers, 15 Dental Officers, 10 Veterinary Officers, and 515 enlisted men (this does not include the medical regiment).

The attached medical troops with an *infantry regiment* will be briefly considered, as the general principles apply to the other divisional organizations.

The medical personnel of an infantry regiment consists of 8 Medical Officers, 2 Dental Officers, 1 Veterinary Officer and 87 enlisted men.

With each regiment there are four dispensary equipments,—one regimental and three battalion.

These dispensaries contain the necessary drugs and equipment to treat minor illnesses and injuries of the command, and to render first aid, and establish aid stations in battle. Each dispensary is carried in a specially constructed wagon.

The operation of the regimental medical service must, during offensive action, meet the following requirements, viz:

1. It must render first aid to wounded.

2. It must prevent depletion of the fighting force by returning to the front all men who are able to carry on with the fight.

3. It must transport wounded from the field to the battalion aid station, or to locations from which they may later be evacuated by ambulances.

4. It must keep in touch with advancing troops, by means of its details which follow the line of advance, and by advance of its aid stations in rear of assault battalions.

5. It must maintain contact with the supporting medical units in the rear which must be constantly informed of the needs for litter bearers, transportation or other assistance, and the routes by which it may operate as far to the front as the battalion aid stations.

6. Its work must be done in cooperation with the plan of attack for the regiment. It must be based upon the attack order. It must be regulated in conjunction with other arms of the service through the medium of regimental staff officers.

7. Its work must be done in such a manner as to give all troops the assurance of assistance in time of need and to interfere in no way with the military mission assigned to the regiment.

The regimental medical personnel is distributed mainly among the battalions, and each battalion divides the medical personnel into combat personnel, and aid station personnel.

The battalion combat personnel accompanies the advance, and renders first aid and collects the wounded, as far as practicable, at collecting points. Seldom in battle can wounded be transported until fire ceases. After fire has ceased or diminished, the wounded are directed and littered to the aid station.

The battalion aid station should be as near the front as practicable, approximately not more distant than a thousand yards.

It should be organized into a receiving section, dressing section, feeding section and evacuation section.

At battalion aid stations only such treatment as is immediately necessary, and which

can be given to the patients' best advantage, should be undertaken. Stimulants should be given, such as hot bouillon, chocolate and coffee; fractures splinted; A. T. S. administered to all wounded; shock cases and gassed cases require special attention; wounds should be properly dressed; and minor operations in urgent cases performed, such as ligations, etc.

Major operations will only be undertaken when opportunities are afforded and it will be considered for the best interest of the patient.

The Medical Regiment.

Having considered briefly the attached medical troops, we will now take up the medical regiment, and the duties of the Division Surgeon.

The Division Surgeon occupies a dual position as staff officer to the Division Commander and as the regimental commander of the medical regiment.

He is responsible for the necessary recommendations for the entire medical service of the division, and for the training and functioning of the medical regiment. He has an Executive Officer who is intrusted with the execution of the ordinary routine duties of the regiment, but the Division Surgeon is the responsible officer.

A medical regiment consists of 68 officers and 850 enlisted men.

The entire medical personnel of a division, attached troops and medical regiment, comprises 148 officers and 1400 enlisted men.

All other organizations of the Medical Department of a division when established for combat are designated as stations.

We no longer speak of field hospitals, as, they are now called hospital stations.

The organization of a medical regiment are:

1. Regimental Headquarters, personnel.
2. One Service Company.
3. One Sanitary Battalion.
4. One Ambulance Battalion.
5. One Hospital Battalion.
6. One Medical Supply Section.
7. One Laboratory Section.
8. One Veterinary Company.

The Service Company consists of 2 officers and 40 men, which is divided into an administrative section and supply section.

The Sanitary Battalion consists of Battalion Headquarters and 3 Sanitary Companies.

The sanitary companies are the links for evacuating wounded between the regiments and the wheeled transportation of the Medical Regiment.

The sanitary companies are equipped for establishing collecting stations, and for transporting, by litters, wounded from the aid stations to the collecting stations.

There is one sanitary company for each brigade; usually the Artillery Brigade will utilize the nearest infantry collecting station, and thus allow the employment of one sanitary company as a reserve for litter bearer work when other collecting stations and the attached medical personnel with regiments are overworked.

It is only by having contact with regimental surgeons that the Division Surgeon is informed of the need for additional personnel for bearer work, and therefore be able to utilize the service of the reserve sanitary company to the best advantage.

Each sanitary company at war strength has four officers, eighteen non-commissioned officers, and eighty-two Privates First Class and Privates.

The Collecting Station is organized, as previously described, for aid stations and the service performed is similar, but somewhat more elaborate, as it has better protection against fire, farther away from the enemy, and has better opporunities for getting supplies. It is located from 1000 to 4000 yards in rear of the aid stations and usually is the head of ambulance transportation. It seldom occurs that collecting stations are placed farther to the front than it is possible for ambulances to reach by day. (Ambulances under the cover of darkness may at times work as far forward as aid stations or even farther.)

Collecting stations should be placed as far to the front as possible and located so that all points of the firing line will be accessible to it.

It should have protection, wood and water, and the best roads available for transport work to hospital stations.

The Litter Bearer Section.—The litter bearers of the sanitary company transport wounded from the aid stations to the collecting stations.

Ambulance Battalion.—At war strength the ambulance battalion consists of Battalion Headquarters, two motor ambulance com-

panies and one animal drawn ambulance company.

Each motor ambulance company has two medical officers; fifty-five men and twenty ambulances.

The animal drawn company has two officers; sixty-one men and twenty ambulances.

The ambulance companies are purely transportation organizations, and transport wounded from the collecting stations to the hospital stations. They may be utilized for the transportation of wounded to evacuation hospitals when this work is not performed by the Corps.

Ambulance stations are those positions from which ambulances are regulated to the front collecting stations, and they will be dispatched in proper numbers for those objectives which demand urgent evacuation.

The tactical situation will usually indicate in advance the subsector where the greater number of casualties will occur and, of course, the ambulance service will be concentrated in rear of this position, and from the ambulance station the ambulances will be regulated in compliance with the demands of changes in the situation.

A most satisfactory ambulance service would be when good roads run from the center and both flanks to the rear, and converge into one road leading to the hospital station. From a suitable location on this main road, ambulances could be regulated with the greatest efficiency to all collecting stations.

Hospital Battalion.—At war strength the hospital battalion consists of Battalion Headquarters and three motorized hospital companies. Each hospital company has six medical officers, two dental officers, and eighty enlisted men, and twenty trucks one and one-half to two tons each.

There may be one or more hospital stations established. Whenever practicable all hospital stations should be together, in order that the different classes of cases may be grouped, e. g., one surgical, one medical, and one gas.

From one company may be detailed a section for sorting all cases on arrival at station. This sorting section is very necessary and in France the French name of triage was adopted generally. Sorting starts from the firing line, whenever practicable, but the main sorting is done on first arrival at the hospital station.

Hospital stations are usually from three to eight miles in rear of the firing line; they should be away from the main roads of traffic, and not located near dumps, or railroad lines. There is considerable discussion as to whether they should be placed in the open and plainly marked, or whether concealment should be sought. They are usually located out of range of the smaller field pieces but they are not out of range of the bombs from aeroplanes, or the heavier guns.

Hospitals in France were sometimes raided by aeroplanes, but from a careful consideration of all raids that I have heard of, it would appear that the hospitals were either not plainly marked, located near dumps, or the raid was in retaliation for what the enemy considered injustices perpetrated.

I am inclined to believe that generally hospitals should be placed in the open and plainly marked, avoiding dumps, main roads, artillery positions, etc., as in future wars, it would seem that seldom will locations be afforded for concealment for anything occupying as much space as hospital stations.

We can avoid the agencies of our army that will attract enemy aviators, in the selection of locations for our hospitals, but we can not control the anger of an enemy who thinks that he has been mistreated, and is willing to retaliate. It is not pleasant to have our hospitals bombed at any time, and is equally embarrassing whatever may be the cause. The final decision is whether you will be more inconvenienced by his acts of retaliation in the open or his bombs aimed at you relentlessly in attempted concealment.

Medical Supply Section and Laboratory Section.—I shall not say much regarding these two organizations as their names indicate their use.

They are both usually located near the hospital station.

The Veterinary Company establishes the veterinary Evacuation Stations. One Station would ordinarily be established, the location of which would approximately be the same distance from the firing line as the hospital station. From the Veterinary Evacuation Station the animals after receiving treatment are sent back to the Veterinary Evacuation Hospital. The personnel of the Veterinary Company at war strength is 4 officers and 70 enlisted men.

Estimate of the Number of Wounded.—In every battle contemplated, preparations must be made as to the number of troops to be employed, and the proper proportions of the different branches of the service. Likewise, in order to make the necessary preparation for the wounded, an estimate of the number of casualties must be made in advance. How is this estimate made? It will be impossible for any highly trained authority to tell exactly the number of wounded which will occur in any battle but he will be able, after considering the mission, the number of troops to be engaged, and their training, the different branches to be employed, the terrain, the character of the weapons used, and the morale, in conjunction with statistics of past battles, to know within certain limits what to expect.

Time will not permit an exhaustive study of battle casualties but I desire to call your attention to certain data that have been compiled.

For Regiments:	Strength	Loss	Days in Action	Average % Loss per diem
9th Infantry				
Soissons, June 18-19, 1918	3123	40.7	2	21.35
Champagne, Oct. 3-9, 1918	3448	27.15	6	4.53
Meuse-Argonne, Nov. 3-11, 1918	2600	37.8	11	3.44
16th Infantry				
Soissons, July 18-21, 1918	3000	56.66	4	14.16
28th Infantry				
Cantigny, May 28-29, 1918	2600	37.88	2	18.94

From an analysis of past wars and the incomplete data at hand from the World War, preparation should be made by the Medical Department for handling with dispatch daily 10% of the troops actually engaged: this number of casualties may be expected, more or less. Of each 100 casualties we will expect:

	Open Operations	Trench Operations
Dead	20	25
Desperately wounded	8	8
Transportation, lying	12	12
Transportation, sitting	20	20
Able to Walk to Station Hospital	28	25
Able to walk to Evacuation Hospital	12	10

52% of casualties are permanent loss. 47% are returned to duty as follows:

12% within 30 days.

12% within 60 days.

8% within 90 days.

8% within 120 days.

Approximately 40% of casualties will require transportation.

The proportion of large caliber guns, shell, shrapnel and grenades, to small caliber guns.

	Shell & Grenades	Rifle	Other Wounds
French, 1870-71	29	70	3
Japanese, Russo-Japanese War	8.5	85	6.5
Russians	14	86	0
French, 1914	75	23	2
French, Verdun. 1917	77.2	6.08	16.72
Aisne, Chateau Thierry, 1918	56.3	31.64	12.03

It is impossible to tell the proportions of the deaths caused immediately by the different arms, but of those admitted to hospitals they were as follows.

Gas cases, 74,534; 2% died.

Shell, etc., 49,493; 18% died.

Rifle, MG 19,528; 5% died.

Of 222,252 admitted for different injuries in battle 6% died. Approximately 50,000 were killed.

Ratio of Killed to Wounded.—This varies with every battle. It depends on the type of action, the implements of warfare, and many other factors.

	Killed	Wounded
Germans, in German-Austrian War	1	2.6
American Civil	1	5.5
Germans, in Franco-Prussion War, 1870	1	3.1
American Spanish War	1	5.6
Japanese in Russo-Japanese War	1	3.6
Americans in World War	1	6.54

It will be noted that the latter shows the greater proportion of wounded to those killed. This, I believe, is due to the lower mortality of gas cases compared with other wounds.

THE RELATION BETWEEN THE DENTIST AND THE PHYSICIAN.*

By FRANK LONGAN, D. D. S., Newport News, Va.

In the years that have gone by, the dental profession has not accorded the medical profession the consideration due it, while on the other hand the dental profession has not been accorded the consideration due it by the medical profession.

In the past, particularly in recent years, much injury has been done in cases of systemic troubles where the teeth were involved, or were supposed to be involved. Too fre-

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

quently the physician has gone his way regardless of the dentist and the dentist has gone his way regardless of the physician. This is all wrong, and it is this which is to be remedied.

The dentist in his attitude toward the teeth and their possible relation to systemic disorders must have an open and alert mind and leave no stone unturned to eliminate foci of infection in the mouth wherever they are demonstrated. He owes this to the physician and the patient; on the other hand, he must not permit himself to be stampeded out of common sense and reason and submit to the extraction of every suspected tooth in a patient's mouth merely because the physician orders them out.

In recent years, physicians have acquired an altogether exaggerated suspicion that the teeth were at the bottom of too many ills of humanity, and too frequently they have condemned the teeth without a sufficiently careful investigation of these organs or without looking further to see if by chance some other organ or organs might not be the seat of the difficulty. In other words, the medical man and the dentist have been working at cross purposes, and this has resulted in much harm and injustice to the patient.

Dentists need the greater breadth of vision, to be gained by association with physicians whose work takes them into a wider field, and whose daily routine is broader and more comprehensive, and conversely, when this is acknowledged.

It may not be presumptuous or out of place to contend that when it comes to a condition in the mouth, the physician should have as much respect for the opinion of the dentist as he demands when the situation is reversed.

Dentists have been making a conscientious and intensive study of the oral cavity and its contents ever since the first dental college was established in 1839, and it would be a very strange thing indeed if they had not acquired a more intimate knowledge of these parts than the medical man whose college training gives him at most only a cursory consideration of this subject. We believe we are well within the mark when we say that it is not with most dentists a question of prestige but simply that the patient may be better served, and not so imposed upon. Many a hopeless victim is today suffering the loss of valuable teeth without the slightest physical benefit, due to an over-zealous conviction upon the part of the medical man that the teeth are accountable for too many of our physical ills.

Now let us see if by working on a fifty-fifty basis we cannot bring about better results or at least a greater improvement in the present relationship. First let us attempt to decide as nearly as possible the dividing line between medicine and dentistry. While this line cannot be definitely established, it may be approximated, and thereby help the situation. Oral surgery and the surgery practiced by the physician specializing in eye, ear, nose and throat work overlap. Into whose realm of activity does a case of trifacial neuralgia fall? Shall the physician or the dentist treat the antrum case after the extraction has been accomplished? Only by increased personal association can these questions be equitably decided.

In order to get at this situation intelligently, let us enumerate some of the faults of the dental profession, and afterwards a few of those contributed by the medical profession which from a dental viewpoint we believe to be wrong.

The dentist is indebted to the physician for many of his referred cases for suspected oral focal infection. The dentist placed in such a position is in exactly the same position as a physician who is called in consultation on a case with another physician. This referred patient is not the patient of the dentist, and he is referred not for treatment, but for a thorough and complete oral examination and diagnosis. After this has been accomplished, a written report should be made to the physician in charge of the case. If the physician desires to act upon the advice given by the dentist he may so order, and the patient then becomes the patient of the dentist. How many dentists follow such a course? Do not most of us, when referred patients present themselves, go ahead and perform any dental operation we deem necessary without taking the physician into our confidence? Might there not be something that the physician is aware of which might contraindicate some one or all of our procedures?

Another fault found in us by physicians is that our conversation with the patient is impolite. In many instances statements made by the physician have been simply contra-

dicted by the dentist and the latter is entirely unaware of the fact. While making the examination it would be wise for us to refrain from expressing any opinion to the patient of the patient's tonsils, adenoids, or any other part which to us has the appearance of being diseased. The proper person with whom to discuss such matters is the physician in charge.

I think we must admit, taking the dental profession as a whole, that many of our examinations in the past have been hasty and incomplete. The reason for this can only be ascribed to carelessness and the lack of concentration upon the part of the dentist to the case in hand. The dentist should let no minor detail escape and hence be overlooked in the general summing up of his diagnosis. Spare not the radiographic work on account of sympathy for patient's pocket book. Let the clinical laboratory perform its duty, if necessary. Innocent looking teeth are in many instances deadly menaces. If possible, leave no loophole for discussion.

Another item charged to our account, and unfortunately in many instances only too true, is we are charged with sacrificing the health of children in order to produce for them a healthier and more evenly erupted set of permanent teeth. A lady recently brought her son, aged nine, to a physician. This boy was under-weight for his age, and anemic looking. Upon examination, by the physician, of the boy's mouth, he advised the extraction of several of his temporary teeth. These teeth were palpably diseased, and the gums were greatly irritated and swollen and from them pus oozed. They were past any thought of being saved temporarily. The mother upon being so advised responded, "But, doctor, I have just had William's teeth examined by Dr. ———, our family dentist, and he said that some of the teeth were badly decayed but not to extract them because if they were taken out his permanent ones would come in crooked. If they begin to bother him too much, bring him back and I will extract them. Let him keep them in his mouth as long as possible."

These are a few of what we believe to be dental errors.

Let us now turn to those committed by the physician. Many physicians will not place dentistry upon the plane which we, as dentists, believe it should occupy. Many physicians insist upon contemplating the profession more as a trade than as a profession. Though the dentist's ratio of respect has been increased, he is still well below par. Evidently, the dental profession has not been sufficiently successful in its efforts to convince the medical man that dentistry of today is fully the equal of any other branch of medicine and, therefore, entitled to a position of respect such as that occupied by the eye, ear and nose spcialist.

How many cases have I had referred to me by the physician with definite instructions to extract this or that tooth which has never been radiographed? I would be afraid to enumerate the number of such demands made upon me. In many instances, complete extraction of all the teeth has been ordered. In some instances, the demand was justified; in others, I would have been guilty of gross malpractice in acting upon such orders.

Let us again look at the border-line between medicine and dentistry, and this time from the view-point of the physician, overstepping by extracting teeth, inferior maxillary fracture bandage, cysts and small fibrous growth removed. How many cases are referred to the dentist diagnosed by the physician as oral infection where the physician has exhausted the pharmacopoeia and failed to give any relief! How many patients come to the dentist with a history! And how is the dentist to inaugurate a course of successful treatment without a history of the general condition given by the physician?

Having divided the error column on a fifty-fifty basis, what is the answer? As we see it, there is only one solution and the answer is lack of association between the two professions, lack of intimacy, lack of mutual confidences, and lack of co-operation. The time has come when the physician must respect the dentist as a brother and not as an inferior brother. The time has come when, in order for either side to advance, they must march side by side.

PHYSIOLOGICAL REST TO THE LARGE BOWEL BY SURGICAL INTERVENTION.*

By R. L. PAYNE, M. D., Norfolk, Va.
Surgeon, St. Vincent's Hospital.

The importance of rest as the chief fundamental principle in the treatment of inflamed

*Read by invitation before the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

and infected tissues has long been recognized and the basis upon which modern intestinal surgery is now handled and which has been responsible for its wonderful progress and marvelous achievements is the principle of rest. We have long since recognized the value of rest in certain portions of the large bowel, especially the sigmoid and rectum, as accomplished by a left-sided colostomy and the value of this measure is well known both as a life-saving procedure in acute intestinal obstructions and also in the late chronic obstructions of malignant disease and particularly as a valuable resource and protective measure in cases where subsequent radical resection is necessary.

The relief from absorption resulting from complete physiologic rest of the intestinal tube, together with a diminution in the oedema, inflammatory reaction and infection, is familiar to you all; especially is the mechanical relief afforded by rest well emphasized in considering the relaxation and the opening up of a stricture of the esophagus and many of us have seen a patient, completely obstructed in the esophagus, later able to swallow after complete physiologic rest in this portion of the gastro-intestinal tube by a timely gastrostomy.

All of Lane's intestinal stasis work, except the resection, had as its fundamental principle that of physiologic rest to the large bowel, and the feature of rest after gastroenterostomy for gastric and duodenal ulcer is familiar to you all. It is the purpose of this paper to call your attention to the value of a surgical procedure first described and advocated by Dr. John Young Brown, of St. Louis, which has helped me so many times and proved so valuable that I thought it worth while to bring to your attention today. The procedure consists of a complete severance of the terminal ileum just before it joins the cecum, making an artificial anus out of the proximal opening and closing completely the distal opening. The cecum is then brought up through the abdominal wall and a cecostomy or an appendicostomy is performed through which complete irrigation of the large bowel can be accomplished, while the complete physiologic rest is continued long enough to permit of healing or resolution of whatever lesion that effects the large intestine. You will thus note the entire contents of the intestinal canal above the cecum is discharged on the skin through the artificial anus in the terminal ileum and, contrary to most teachings, there is very little odor or stench to the small bowel contents as compared with the colon and, in addition, there is very little irritation of the skin.

Another interesting observation that I have made is that the small bowel usually dilates above the artificial anus sufficiently to permit an absorption of the fluid part of the intestinal contents, seemingly to be an attempt upon the part of nature to develop a cecum, and the result of this dilatation of the small bowel above the artificial anus is not only an absorption of the fluids of the small bowel contents but a solidification or semi-solid formation of the stool, which in the beginning is always liquid, thus greatly facilitating the care and cleanliness of the artificial anus; thus you will see that the entire colon is completely put out of function and complete physiologic rest is attained.

The time necessary for complete healing of the lesions in the colon will depend upon their character, but usually the physiologic rest should be kept up about ninety days at which time, if we are able to decide that the colon is again capable of proper function, it then becomes a simple surgical procedure to go in and close the artificial anus doing an anastomosis into the colon after the manner of an end-to-side, or a lateral, anastomosis, the cecostomy closing of its own accord as soon as no effort is made to keep the opening patulous. Dr. Brown's original description of the operation provides for a tube enterostomy in the cecum with the opening of the abdominal wall in the flank and the withdrawal of the cecal tube from within outward. I do not like this type of cecostomy and would advise the type by which a small piece of the wall of the cecum is made to pouch through a stab wound in the flank and this sutured, but not opened for forty-eight hours. My reason for especially preferring this latter type of procedure is because of the inherent dangers of infection from the colon where, particularly in the cecum, myriads of organisms are so commonly grown. It is not necessary for these patients to be invalids during the period of physiologic rest to the colon for, after the healing of the abdominal incision, it is possible for the patient to wear an ordinary colostomy bag and

get around as any other colostomy case would do. In one particular case in which this procedure was applied, the patient had lost 60 lbs. in weight from an ulcerative amebic colitis and this entire weight was gained back in seven weeks from the date of the primary operation and complete recovery, together with a re-establishment of the intestinal canal, was obtained in three and one-half months from the date of the original operation.

I think this John Young Brown procedure is too little known and certainly too seldom practiced, if we would depend upon the report in literature, and I believe that a great deal of the radical colectomy procedure of Mr. Lane for marked colonic stasis and mucous colitis could be more conservatively corrected with the complete physiologic rest afforded by this measure and with considerably less danger to the patient than by the more radical procedure of complete removal of the colon: and equally true is this of the less radical procedure of the ileo-sigmoidostomy practiced so long by Lane and his followers, which never results in complete physiologic rest of the colon. In the ulcerative type of colitis due to the ameba, the chronic bacillary infections and those due to the tubercular organism, we have a more marked pathologic process which, generally speaking, is never relieved except by some form of surgical procedure, and we have long since learned to recognize that these cases are better treated surgically than by medical means. Ileo-sigmoidostomy and cecostomy have been the principal measures relied upon to relieve ulcerative colitis, but the complete physiologic rest afforded by the Brown operation is so far ahead of the other two measures just mentioned that I do not think we can afford to make a comparison. For instance, in a cecostomy the procedure simply permits of colonic irrigation and medication and, as fast as the colon is washed out with irrigating solutions, it fills with the fecal contents from the small bowel above and thus the area under treatment is consantly contaminated by the fecal contents and there is never any opportunity for complete physiologic rest which is so essential to the healing process of the diseased and infected tissues.

I would like to emphasize the value of this procedure in the treatment of obstruction in the sigmoid and rectum due to advanced and inoperable lesions. It is decidedly more preferable than the left-sided colostomy above the site of obstruction, because the fecal contents are more readily handled and the complete physiologic rest, together with the possibilities of irrigations and drainage of the colon, permits of a lessening of the toxicity and absorptive features in the case; whereas, if the lesion should prove to be benign, as for instance a large inflammatory diverticulitis or a syphilitic stricture, it is more easy to re-establish the continuity of the intestinal tube than to close a left-sided colostomy opening. Dr. Brown advocated this procedure to be used also in benign obstruction of the large bowel low down or in cases where the diagnosis was doubtful, but I have never had any experience in applying the procedure to such conditions and doubt very much the propriety of this form of intestinal drainage when in acute or sub-acute obstruction a simple enterostomy in the terminal ileum would do equally as well and could be closed more readily than the radical procedure of lateral anastomosis.

I have practiced this John Young Brown procedure in three cases of ulcerative amebic dysentery with splendid results in all three cases, and in one case of tubercular colitis with ulceration and recurring hemorrhages the result was all that could be expected. In another case of ulcerative tubercular colitis, the patient did not do well following the operation, continued to have repeated and recurring nausea characteristic of intestinal obstruction, accompanied by vomiting in spite of the fact that the terminal ileum drained profusely, and this patient finally died, after four weeks, from lack of nourishment, together with a general miliary tuberculosis which involved the liver and pancreas. On two other occasions I had used this procedure for the relief of obstruction associated with advanced and inoperable carcinoma of the rectum and in these cases the patients were afforded considerable relief and a wonderful abatement of the toxicity was almost immediately apparent. While my experience with the John Young Brown procedure has been indeed very limited, at the same time the results have been very encouraging and have seemed to warrant in my practice the continuance of this procedure for those cases in which it is properly applicable and I feel that it is well worth advocating before you today.

225 *Granby Street.*

THE FIRST AID TO THE INJURED EYE.*

By CLARENCE PORTER JONES, M. D., F. A. C. S.,
Newport News, Va.

Decision of action and promptness in emergency is the best test of any man's resourcefulness. A medical man may be summoned at any hour to treat an injured eye; with what trepidation he responds and how anxiously he wonders on his way how serious the injury might be and what shall he do for the patient has come to us all. After a time the ripeness of experience teaches us to possess a soul of patience and give due thought before acting.

When arriving at the home, the patient may be suffering severely and himself and relatives all excited over a possibility of blindness and, unless the medical man keep cool and not lose his head, he is prone to succumb to the atmosphere of nervousness and err in being too optimistic in his prognosis.

He may say "calm yourself, madam, your husband will be all right in a day or two," thereby arousing hopes which can never be fulfilled. In giving a prognosis, always say in case we are so fortunate as not to have any infection, it seems as if it will be so and so, thus qualifying your statement in every case.

Every injury of an eye should be assumed to be infected and treatment rendered as if infection had been proven.

The conjunctival sac always contains germs which may become pathogenic. It if were possible to sterilize it, a speedy reinvasion takes place through the tear passages from the nose.

Antiseptics should be used with care, as extreme dilution of carbolic acid and corrosive sublimate easily injure the epithelium and encourage opacity of the cornea. As strong antiseptics are prohibited and weak ones are ineffective, the best thing to do is to flush with normal salt or boric acid solution, using a sterile medicine dropper, or a small syringe.

Foreign Bodies in the Conjunctiva.—In any case when a foreign body gives much pain or discomfort, the first thing to do is to instill a drop of cocaine four per cent, repeat in two or three minutes, then carefully inspect the surfact, invert the upper lid by catching hold of eyelashes, having the patient look down, at the same time pressing on the base of the lid with a probe or the finger, remove the offending body by wiping away with a sterile cotton-wound applicator or cotton-wound tooth-pick, and flush the eye with boric acid or normal salt solution. If there is much reaction, a small bottle of the solution of boric acid and a dropper is given the patient to take home and he is instructed to flush his eye out hourly for twelve to twenty-four hours.

Foreign Bodies on the Cornea.—When the cornea is invaded, we have a much greater responsbility as infection here is easier to take place, and results are far more disastrous. *Every injury of the eye must be assumed to be infected* and most especially is this true of the cornea; unless efficient antisepsis is practiced, the danger is great.

After cocainizing and flushing the eye with a bland solution, an embedded foreign body on the cornea should be removed by a sterile cotton-wound tooth-pick; should this fail, a dull spud may be tried and, in every case after removal, tincture of iodine should be applied to the site of abrasion on a cotton-wound tooth-pick, the excess of the iodine being previously squeezed off on the sides of the bottle, and a compressed bandage used for twenty-four hours. Unless in a case where circumstances forbid the patient's leaving home, a practitioner should not attempt to remove a deeply embedded foreign body from the cornea or make denuded area on the surface of the cornea unles he has had competent training in the care of the eye, as impairment of the sight occurring from this kind of injury is one of grave responsibility. Acetate of lead should never be used in the eye.

Wounds of the conjunctiva and the lids require the usual antiseptics and compress bandage. When the lids are involved, prompt suturing with fine catgut, the lid margins approximating accurately the lash line and, if possible, seal with collodion.

Burns of cornea and conjunctiva are always severe. The first aid should be clearing away all the offending material, molten lead, lime, etc., fill the eye with borated vaseline and a compress bandage applied.

In contusions and penetrating injuries, at the first aid always get a few facts of the history of the accident: what the missle was, whether it was seen after the accident, ex-

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

amine closely for a wound of entrance, etc. All these facts will be useful, whoever treats the case. If there is a tag of iris protruding from a wound, the same should be snipped off with curved scissors. At all events, all contused or punctured wounds of the eyeball should have atropine, two per cent, instilled and a compress bandage at the first aid. Of course a punctured or contused injury of an eyeball is of necessity a hospital case.

In conclusion, let me impress on the practitioner in rendering the first aid to the injured eye:—

(1) Cocainization, a four per cent solution, should be dropped in the eye before examination.

(2) Flush eye with normal salt solution or boric acid solution.

(3) Remove offending bodies with sterile cotton-wound toothpick or sterile spud.

(4) If a wound is on the cornea, always touch with tincture of iodine and put in some borated vaseline and then put on a compress bandage for twenty-four hours.

(5) Suture carefully all lid tears, approximating the lash line and seal with collodion, if possible.

(6) In burns of the conjunctiva and cornea, cocainize thoroughly, remove carefully all the offending material, put in borated vaseline and put on a compress bandage.

3117 *West Avenue.*

ARTERIOSCLEROSIS.*

By THOMAS M. WOOD, National Soldiers' Home, Hampton, Va.

It is hoped that this paper may fill a place in the already crowded field of medical topics. My attempt has been to give to you an authoritative essay on a disease which is especially an outcome of modern civilization. To that end, all the available literature has been fully consulted and the newest results of experimented research, and the recent ideas of leading clinicians have been summarized. I have supplemented these with facts from my own experience, but thought it best not to burden the contents of my paper with case histories.

The stress and strain of our daily life has as one of its consequences early arterial degeneration. There is no doubt that arterial disease in the comparatively young is more frequent than it was twenty-five years ago, and that the mortality from diseases directly dependent on arteriosclerotic changes is increasing. Fortunately, the almost universal habit of getting out of doors whenever possible and the revival of interest in athletics for persons of all ages have to some extent counteracted the tendency to early decay; nevertheless, the actual average prolongation of life is now probably due to the very great reduction in infant mortality and in death from infectious and communicable diseases. The wear and tear of the human organism in our modern way of living is excessive. Hard work, worry, exposure and high living all predispose to degenerative changes in the arteries and so bring on premature old age.

I have tried to emphasize this by laying stress on the prevention of arteriosclerosis, rather than on the treatment of the fully developed disease. It has been difficult to keep from wandering off into discussions of conditions incident to and accompanied by arteriosclerosis, but, in order to be clear in any statements and complete in descriptions, I have had to invade the fields of heart disease, kidney disease, brain disease, and so forth.

I trust, however, that these excursions will serve to show how intimately disease of the arteries is associated with diseases of all the organs and tissues of the body.

The four cardinal signs of arteriosclerosis are as follows:

(1) And most significant, palpable arteries and harding of the arteries:

(2) High blood pressure:

(3) Dilated left ventricle:

(4) Rough and accentuated second sound of the aortic valve.

The classification of arteriosclerosis in regard to frequency and importance, (1) Kidney; (2) Heart; (3) Mesenteric vessels; (4) Cerebral vessels.

One of the frequent complications of the kidney, subsequent to arteriosclerotic changes, is essentially a hypertonia with a hyposthenuria, meaning low kidney function. Accompanying this diminished function, it is a common occurrence to find a nocturnal polyuria, but during the day, from 5 A. M. to 6 P. M., only about 400 c.c. of urine is voided. It is almost impossible to concentrate the urine above 1020 when on a water-free diet. This is indicative of a lack of elasticity of the renal

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

vessels or resultant fibrosis, beginning or advanced, and lack of kidney work or function. Non-protein and nitrogen retention above thirty is very significant of fibrosis; urea above fifteen, uric acid above 2.5, creatinin above 2.5, is also significant of low kidney function, if associated with a high blood pressure, and, especially so, if the diastolic pressure is increased ten or fifteen m.m. of Hg. High blood pressure alone is not dangerous but, when associated with a hyposthenuria the condition is considered very grave.

In our consideration of the heart, angina pectoris is a fibrosis of the coronary arteries. The symptoms are the following: Substernal pain radiating down the left arm to the finger tips, sense of oppression in chest, characteristic feeble pulse and great anxiety of patient; other common conditions of the heart, as previously mentioned, are a dilated left ventricle and a rough accentuation of the second aortic sound.

Low blood pressure means the loss of elasticity of the arteries and a degeneration of the cardiac muscles. These are the cases that are likely to have a hemorrhage. The degree of arteriosclerosis is dependent upon the elasticity of the arteries.

The mesenteric vessels are more frequently involved in the male sex, manifesting between the fiftieth and sixtieth years of life, abdominal distress, flatulency and slight pain, intestinal indigestion and gastric disturbances. The above mentioned signs occurring at the age stated, when cancer is eliminated, are almost pathognomonic of mesenteric arteriosclerosis.

Cerebral arteriosclerosis is usually accompanied by the symptom-complex of neurasthenia. It is difficult for patients to concentrate; they cry without any provocation; they are pessimistic and very emotional. There are localized sclerotic areas in the cerebral vessels, which diminish or practically retard the circulation to the brain.

The treatment of a patient with arteriosclerosis is essentially that of a very sick individual. The general line of treatment is, first and most important, absolute rest, relieving any undue demands upon the arteries that are sclerotic. The patient's life must be regulated so that he or she may live within their arterial limitations. It is absolutely necessary to eliminate all causing factors such as hard work, focal infections, tooth abscesses, infected tonsils, sinuses, etc.

Arteriosclerosis is sometimes encountered in children convalescent from measles, typhoid fever, and pneumonia; in adults following syphilis, tuberculosis, nephritis, diabetes, and gout; in some instances it is hereditary. Intestinal putrefaction and chronic constipation are also common causative factors. A hypersecretion of adrenalin causes arterial changes as well as hypothyroidism and hypopituitarism. Stimulants such as alcohol, tea, coffee, tobacco and nicotine produce a localized fibrosis of the coronary arteries (angina pectoris).

Drugs indicated and most often used in arteriosclerosis are diuretin, grains five, four times a day. The iodides are indicated when the condition is of specific origin. Sajodin is often used in alternation with diuretin, dose grains seven and one-half, three times a day. Radium and X-ray have very little if any effect. Electricity is said to possess some virtue but, to my mind, this is questionable. Hydrotherapy is indicated and some good results have followed this procedure. Nauheim baths, trition salts, the electric light cabinet bath, followed by a good salt rub, are beneficial.

Patients with arteriosclerosis are very susceptible to the slightest changes in temperature. They often manifest chilly sensations and feel cold most of the time. These patients should wear warm clothes and, if possible, live in a moderate climate during the winter months. The cause *per se* of the chilly sensation in patients with arteriosclerosis is due to the fact that the arteries cannot meet the demand of the sudden changes of temperature due to the loss of elasticity.

THE LABORATORY AS AN AID TO DIAGNOSIS.*

By M. B. BEECROFT, M. D., Newport News, Va.

The place that the clinical laboratory occupies today in relation to the creditable hospital and general practitioner is well recognized. More and more work of a routine character is being done in connection with the study of cases than has even been done before, but, in spite of this fact, even more careful

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

study from the laboratory standpoint would soon be found to bring forth more gratifying results in the diagnosis and treatment of disease, both medical and surgical. When we consider the state of our medical knowledge, it is not necessary to call attention to the importance of the results obtained by careful study of the blood, urine, etc., as an aid to diagnosis, as the physician is not as yet equipped sufficiently with diagnostic methods to be able to overlook any phenomena which may lead to a better knowledge of disease. The results obtained by careful laboratory examinations may completely overshadow those secured by physical examination of the patient. Very often they may act merely as a check on the physcal findings and at still other times they may only be of scientific interest and not of much importance in arriving at a definite diagnosis.

The object of this paper is to bring to your attention some of the results obtained by laboratory procedures, not those of a highly technical nature, but those which are carried out every day in the modern clinical laboratory and have proven conclusively their worth as an aid to diagnosis. Many of them are well known to you already but, in spite of this fact, a review may be of benefit and at the same time may stimulate you to make use of the laboratory more extensively than has been your custom in the past. Many of them can be carried out in the physician's office except for the time required and the necessary articles of equipment needed for their performance. In these days of specialization, it is very rare for any community to be very far removed from a clinical laboratory, either connected with a hospital or privately conducted for the benefit of the physicians of the community and outlying districts.

Before proceeding further, it might be well to state that it is generally conceded that the well trained pathologist should be considered a specialist in his line as much so as the surgeon, roentgenologist, etc., is considered in his branch of medicine. For this reason he should receive the benefit of the history, symptoms and physical findings of the case, thus aiding him to a large degree in giving his opinion on the results obtained in the laboratory. It is true that, in the majority of cases, the results obtained are either positive or negative, with of course proper checking of the negatives to make them of definite value. This is also true with the positive results, if the clinical findings seem to indicate a marked discrepancy. It can easily be seen how the data on the case in question will oftentimes suggest at once some further examination with which the physician is either not familiar or which he has overlooked as not being of benefit. The above facts are so true that the clinical pathologist in many hospitals often makes rounds with the chiefs of the various services or is consulted through the medium of the staff meetings or the clinical conference held at many of the hospitals.

Another question that has come up recently is the status of the lay technician. In some communities they have established laboratories which the physician is invited to patronize. It is, of course, true that many of them have become very proficient in the actual performance of many of the tests but are not capable of interpretation of the results obtained, which many physicians expect when they send specimens to them for examination. Their work should be under the control of the physician who has made a special study of clinical pathology, as it is not reasonable to expect them to be as well qualified to interpret results, as is the physician who has acquired his knowledge by medical study and clinical observation both in his medical school days and during his internship, before specializing in this branch of medical science.

The first topic which will be taken up is that of examination of the urine. More data can be derived from the careful examination of the urine than is generally realized or, if it is realized, it is very much neglected. When we think carefully of the numbers of our own cases which have been treated for variable periods of time without the urine ever having been examined, we can realize how neglectful we have been. In my experience in laboratory work, I can recall many cases that have been treated for lumbago, malaria, neurasthenia and what not, when the simple examination of the urine would have at once put the physician on the road to a correct diagnosis and proper treatment of the case. Improper examination of the urine, many times, is as bad as no examination at all. Very often the physician will examine the urine for albumin and sugar without investigating the sediment. It is true that absence of albumin and sugar in

a specimen is a fair index to the condition of the kidneys, etc., but it must be remembered that there are instances where these findings are not indicative of normal structures. One example of this is the finding of casts in the urine in certain types of nephritis, where albumin cannot be demonstrated. Another striking example is the absence of sugar in severe diabetes with large amounts of diacetic acid and acetone present.

When albumin has been demonstrated, it is absolutely necessary to examine the sediment to determine the cause, for it can be easily seen that the finding of pus cells, red blood cells, etc., calls for other procedures before a diagnosis can be made. To simply say that the patient has nephritis and treat him accordingly, is doing the patient a grave injustice to say the least, and still it is surprising how often it is done. The presence of pus cells and red blood cells at once calls for other methods of diagnosis such as cystoscopic examination with ureteral catheterization, prostatic massage, X-ray examination, etc. Bacterial studies are indicated for determining the presence or absence of infection, but if found to be present, its origin can only be determined by examination of the urine collected separately from each kidney by means of the cystoscope and ureteral catheterization, etc. The presence of casts in the urine has become the primary step in the diagnosis of nephritis but this will be discussed under the subject of blood chemistry. The finding of albumin in the urine, without being able to demonstrate any cause when the sediment is examined, should not be dismissed as idiopathic, as it may be indicative of grave kidney disturbance when we remember that such men as Cabot, Barker, and others have pointed out that it requires a fairly good kidney to produce casts.

In considering sugar in the urine, there are a few points which have to be taken into consideration. In some of the milder types, a specimen may not contain sugar, especially the night specimen, and for this reason several specimens, representative of various times during the day, should be examined when diabetes is suspected. Glucose in the urine is not always indicative of diabetes as we see it following excessive ingestion of carbohydrate, the so-called alimentary glycosuria, following the use of drugs as phlorizin, chloroform, amyl nitrate and after asphyxia from the inhalation of illuminating gas. It also occurs after severe burns, accompanies cirrhosis of the liver, shock, injuries to the brain, apoplexy, and many nervous diseases. Glycosuria and diabetes are often seen associated with exophthalmic goitre. They may also be seen following thyroidectomy and have been noted after the administration of large doses of thyroid extract. The lessening of the glycosuria, or its absence in diabetes, should be watched very carefully. You are all aware of this fact from your clinical observation of your cases, as it oftentimes indicates the appearance of the stage of acidosis. This condition is recognized by the presence of acetone and diacetic acid in the urine. It is very important in the management of a case of diabetes that these products be tested from time to time. Further consideration of sugar in urine will be taken up in considering blood chemical examination.

Many other urinary examinations might be mentioned as valuable aids to diagnosis but sufficient has been said to emphasize the importance of careful urine examination. One other test, however, is of great importance, the renal function test which affords accurate information in nephritics and when used in conjunction with ureteral catheterization as an index as to kidney function, either combined or separate.

The next topic, that of blood examination, opens up a large field of useful information. So much information can be obtained from careful examination of the blood, that most hospitals of the country have adopted many of them as routine procedures. One of the simplest and most used of all blood examinations, the leucocyte and differential count, of itself offers a vast amount of knowledge and is often the starting point for further study. Most surgeons consider it as a valuable aid in the differential diagnosis of surgical conditions. In the diagnosis of appendicitis, the findings are fairly constant; namely, rather marked leucocytosis with a corresponding increase in the polynuclear leucocytes.

In lobar pneumonia it is also of benefit in the diagnosis, but the chief advantage in this condition is in prognosis, as an absence of leucocytosis is considered as a bad prognostic sign.

In the continued fevers it plays an important part as is indicated by the finding of a

leucopenia, which calls for further study by means of the Widal test and blood culture studies. In reference to the Widal test, it is well to remember its limitations, namely its occurrence at a later stage than that in which the blood culture findings are positive, and is, therefore, of no value in the early diagnosis of the disease. It is also of no value in those persons who have been inoculated with typhoid vaccine. In types of continued fever, other than typhoid, those due to osteomyelitis, following labor, abortions, etc., the leucocyte and differential also offers material aid in the diagnosis.

A recent report has been published which points out the value of the presence of a leucopenia with a corresponding increase of lymphocytes in the diagnosis of focal infection. The report was worked out in a large series of cases of established focal infection of tonsillar and dental origin and the results are quite uniform and appear to be of considerable aid.

It is also by means of the leucocyte and differential count that the diagnosis of the leukemias is made and the progress of the case observed following the modern methods of treatment by radium, etc.

It is now very rare for a person to be treated for anemia without a definite anemia being demonstrated by means of the red blood count and hemoglobin estimation. It is by this means in conjunction with the stained smear that accurate diagnosis of the various anemias is made and the proper treatment instituted. We also have many less patients treated for malaria simply because they have had a chill or chilly sensation. Many mistakes would be avoided by first demonstrating the organism before placing the patient on anti-malarial treatment or by going into the case thoroughly from other standpoints. It is true that there are cases in which the organism cannot be demonstrated but let the therapeutic test of the disease be the last, instead of the first procedure.

The development of accurate methods of blood chemical examination has made available practical information on conditions which the older methods of blood examination, bacteriology, serology and cytology have given little or no information, reference being made chiefly to nephritis, gout, and diabetes. It is by means of many of these tests that early diagnosis can be made or even prophecies made as to the probable condition, if steps were not instituted to inhibit or prevent some of them.

The sugar content of the blood is one of the most important of the many blood chemical tests. In that group of individuals that we often see who have gained weight rapidly, we have a valuable index as to their future possibilities. Many of them are potential diabetics and by the knowledge of their blood sugar content we are able to institute means which, it is thought, may change their future possibilities. Dr. John, of Cleveland, who has carried out a large amount of work in connection with the study of diabetes, has found that by means of the glucose tolerance test he can establish a fairly accurate index as to whether or not a person may develop diabetes. In carrying out the glucose tolerance test he classifies his patients into four groups, according to the manner in which they react. The first group shows no rise in the sugar curve after the ingestion of 100 grams of glucose which signifies that it is burned up or stored as fast as it enters the circulation. In the second group an early rise with an equally early return signifies that an accumulation occurs in the first half hour but has been taken care of by the end of an hour The third group shows a still slower reaction, the sugar remaining in the blood for a longer period but the burning or storage is accomplished by the end of three hours. In the fourth group the utilization of the sugar is distinctly slow but eventually is used up, providing no more is added. The first two groups are considered normal, the third group pre-diabetic, while the fourth group is distinctly diabetic. In speaking of the type of patient which should be subjected to the test, he mentions the following two classes: First, those in which there is a family history of diabetes and, second, those who suddenly put on fat. He also points out that, in addition to these easily distinguishable groups, many apparently normal individuals may be found dangerously close to the diabetic line and for this reason many physicians and most of the large clinics are adopting the blood chemical examinations as routine procedures. Should a person be found to fall in group three, he should be instructed to cut out sugar and candy and eat only sparingly of pastry. Then once in six months have a blood sugar determination

made to determine whether or not more stringent dietary measures are needed. This is especially true if in the meantime the patient has been the subject of any infection which has as a possibility any involvement of the pancreas. In emphasizing the advisability of routine blood sugar determination, Dr. John also calls attention to the fallacy of simple urinalysis and quotes observations on 714 cases with the following results: thirteen and two-tenths per cent showed glycosuria without any increase of blood sugar and were not considered as diabetics, eighteen and three-tenths per cent showed no glycosuria but had hyperglycemia and were distinctly diabetic.

This brings up the question of renal diabetes which, broadly speaking, may be considered as a condition of glycosuria not dependent upon a temporary increase of blood sugar, in a person free from symptoms of diabetes. It should be remembered that the excretion of sugar in the urine is simply one of nature's processes of safety and, as the disease advances, attention should be given to the degree of acidosis and this is determined much more accurately by the method of Van Slyke for carbon dioxide combining power, than by any tests made upon the urine.

In gout, interest centers about the uric acid content of the blood but the blood urea nitrogen is important to determine if the uric acid noted is not purely of nephritic origin. In the absence of renal involvement, blood uric acid is not increased in true arthritis.

In nephritis, chiefly of the interstitial type, one of the first changes noted is an increase of uric acid but, as the disease progresses, urea retention is noted. Figures of above 20 mgs. per 100 c.c. are good evidence of renal involvement. Creatinin being the last nitrogenous substance retained should always be determined when high figures of blood urea are obtained. Figures above 5 mgs. invariably are indicative of a fatal outcome. In the acidosis of acute and chronic nephritis, the CO_2 combining power of the blood should always be determined and, by this means, intelligent use of soda bicarbonate can be obtained.

In cases of prostatic obstruction and other urological conditions, the blood urea furnishes a valuable aid as far as the kidneys are concerned. With figures below 20 mgs. surgical operations can be safely carried out. In eclampsia the changes are not marked, although in the severe cases a considerable degree of acidosis is often found. The blood urea is more often subnormal, while the total nitrogen is definitely, but not markedly, increased.

The diagnosis of syphilis from a laboratory standpoint offers many different procedures of importance and it is by these means oftentimes alone that a diagnosis can be made. The first consideration is with the primary lesion. Here, oftentimes, the appearance is so typical that confirmatory evidence only is needed. It is the atypical and multiple lesions that require the most careful examination. In my experience and in that of others, the spirochaeta of syphilis has been found in lesions that were regarded merely as typical chancroidal lesions and treated as such. We very often come in contact with patients who have had a sore on the penis which was diagnosed by the physician as soft chancre and which was treated by cauterization and local applications, and who present symptoms of tertiary syphilis and have a positive Wassermann. This could easily have been prevented by dark field or other examination of the lesion or by means of the Wassermann test on the blood before dismissal of the patient as cured.

The Wassermann blood test needs no introduction to you and is recognized as a very valuable asset to the diagnosis of disease. A few points on the limitations may be of benefit to you in aiding you to interpret the results obtained. In primary syphilis the percentage of positive results varies with the duration of the disease but the average is given from forty per cent to fifty per cent. In secondary syphilis the percentage is very high, ninety-seven per cent, reacting positively. In the tertiary stage, Kolmer gives ninety-six per cent in the active cases and seventy-five per cent to eighty per cent for the latent cases. Congenital syphilis, after one year of age, is also high, ninety-seven per cent to one hundred per cent being reported by various authors in the untreated cases. Continuous treatment with potassium iodide may give a false negative, while, on the other hand, the blood taken after ether anaesthesia or during the febrile stage of malaria will often give false positives. Some cases of scarlet fever, frambesia, leprosy and blood taken from cadavers or moribund patients may react posi-

tively when syphilis can be excluded. In tertiary syphilis, the blood may be negative but in these cases the spinal fluid findings are of great importance. The cell count, globulin reaction, Wassermann test and colloidal gold test are invaluable. Not only is this true in the old, long-standing case, but Fordyce and many others have emphasized the importance of examining the spinal fluid very carefully in all cases, even those who have had vigorous treatment started soon after the onset of the initial lesion. Too much reliance has been put on the negative Wassermann test as to an index of cure of syphilis. Careful clinical observation in conjunction with spinal fluid findings will undoubtedly lead to much more gratifying results in the treatment of the disease.

Many other laboratory procedures might be mentioned but sufficient has been taken up to stimulate more careful study of cases from a laboratory standpoint. It might be mentioned in passing, that more careful study should be made of the sputum, if only from a scientific angle, to determine the cause of lung conditions other than tuberculous. The feces should also be more thoroughly investigated, as the underlying cause of various conditions may be intestinal parasites which must be removed before any benefit can be obtained in treatment. Smears and cultures should be made from the throat in any case which is the least suspicious of diphtheria, as they may oftentimes be the means of preventing disastrous results in this condition where early recognition is essential. Lumbar puncture and examination of the fluid obtained should also be carried out wherever there is any suspicion of meningitis, as it is realized that the only hope of cure in the meningococcus type lies in early administration of the appropriate serum.

In conclusion, it might be stated that this paper has been written from a laboratory point of view entirely. It is realized that the laboratory is only an adjunct in the diagnosis and treatment of disease and that results are best obtained by careful consideration of all the facts; namely, history, symptoms, physical findings, laboratory findings and intelligent observation of the patient.

ARTIFICIAL FEEDING OF INFANTS.*

By J. WILTON HOPE, M. D., Hampton, Va.

Without wishing to appear pessimistic, looking back over a period of thirty-four years of active practice, I have reached the conclusion that in one or two decades the function of mammary secretion in women will be an exception rather than the rule. This may be due in a greater measure to the more successful efforts in the rearing of infants by modified milk feeding than to the desire to evade the responsibilities of maternity. This paper is more or less extemporaneous and is prefaced by an apology that its intent is more practical than technical, which, at this up-to-date period, requires an explanation, as one who is not technical can not be scientific, judging from the articles written in the average pediatric journal. This paper is a report of practical experience, nevertheless.

A careful inquiry into the history of the infant and that of the mother and the methods attempted before you have taken charge will advance your knowledge of what is best as an initial effort. Write out carefully all directions as to formulae and feedings. Make up and divide into as many bottles as feedings for 24 hours at the time. State carefully amount of food and intervals between feedings. Give careful directions as to care of bottles, nipples and utensils used in preparation of food, and use every effort to impress on the mother the absolute necessity of strict cleanliness and the fact that all her efforts will amount to nothing, unless nipples, bottles and mixing accessories are rendered sterile by boiling. Also impress on her the necessity for clean milk as the basis of the food. The surroundings of the milch cows and their care and attention, unless given due consideration, will nullify all her efforts. Explain to her that milk cooled to approximately 36 degrees immediately after milking from the cow and kept at this temperature will keep sweet from 48 to 72 hours, without pasteurization or any preservative, and that and cleanliness (sterility) are the absolute essentials, without which it is a hopeless task to feed an infant artificially. I have never fed an infant on pasteurized milk. Assuming, without at the time knowing of water and fat soluble vitamines,

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

that heating must destroy some valuable property of breast and cow's milk or the Creator would have seen to this from its natural source, I have avoided it. At times, boiling milk will prevent its coagulation in large hard curds in the infant's stomach and apparently improve its digestibility, but this is not to be done, unless its source is questionable and only as a question of the lesser of two evils.

Clean, cool, fresh, raw, cow's milk is the best basis for the preparation of infant's food. It contains the proper elements for the nutrition and growth of the infant. It can be made digestible, and can be readily estimated by its caloric value as to the necessary amount for the growth and sustenance of the infant. It contains proteins, fats, sugar and mineral salts,—all the essentials to human cell growth. —and is the most valuable single food and the only one that will produce a steady gain in weight and a healthy body up to a certain period in the life of all mammalia. Remember that there is a very narrow margin between an infant's digestive capacity and its bodily needs to gain weight, and this margin must be carefully noted. A healthy growing infant should gain from 6 to 8 ounces per week; should have from 1 to 3 movements in the 24 hours, and should sleep a greater part of the time up to six months of age.

Fortunately, the human infant is an adaptive little organism. Mother's milk contains sugar and fat in a greater degree than cow's milk, and less curd or protein, but the little being can use more protein to make up for less fat and the sugar can be added. Personally, and most authorities agree with me. I do not use milk sugar, but for infants under six months use malt sugar, and for older ones cane sugar. Cane sugar can be used altogether at any age, and *vice versa*. Never use, unless infant is ill and there is a reason for same, less than 50% dilution of cow's milk. The rule I use for estimating the amount of calories necessary to satisfy and promote a normal growth and gain in weight is as follows:—For a normally plump infant over 4 months, 40 to 45 calories per day for each pound of weight; 50 to 55 for a thin baby and one under 4 months; and 60 to 65 for an emaciated one. It is best to start on the first basis and work up if it fails to gain, than to use the strongest formula on the start. To work it out:—Given an infant weighing 8 pounds, a few days old, in good condition. 8 x 45 = 360 the number of calories it needs in 24 hours. A safe estimate of the amount necessary at one feeding for a baby is to give 1 ounce more than the age in months, up to 7 or 8 ounces, which is usually enough for any infant. The interval between feedings for first month is 2 hours, after that 2½, and it can be increased to 3 hours when 4 months old.

To work out the daily ration as stated before, an 8 pounds, few days' old baby, needs 320 calories per day of 24 hours.

Twelve ounces of milk with a caloric value of 20 c.c. to the ounce = 240 cal. — 12 ounces water = no cal. (all prohibitionists take notice) 1 ounce of cane sugar or malt sugar = 120 cal. 240 cal. of milk + 120 cal. sugar = 360 cal.; divided into 10 feedings, gives 2 ounces at a feeding for 24 hours. As the infant grows and feedings are increased in amount, the night interval can be lengthened. A 4 months' old baby should sleep from 10 P. M. to 4 or 5 A. M. It is well to keep the infant on first formula from a month to 6 weeks, or as long as the gain in weight is normal, and to add on the number of calories for weight each month, if towards the last weight does not increase as it should, thus:

8 pound baby needs 360 to 400 calories per 24 hours:

12 ounces milk = 240 cal., 12 ounces water and 1 ounce sugar = 120 cal.

The proportion of sugar to liquid measure is about 1 ounce of cane or malt sugar by weight for each 20 ounces of liquid food.

The idea has long obtained that lime water, sodium bicarbonate, sodium citrate and potassium carbonate increased the digestibility of the casein or curd, but it is practically unnecessary. The digestibility of the curd is increased by boiling, but skimmed milk well diluted is even more easily digested, sometimes even undiluted.

Dilution with gruels has been used, but these have very little advantage, unless the carbohydrate value of the food needs increasing and any advantage derived therefrom depends mostly on this fact. In certain cases of diarrhea, this has some value. It is pretty generally conceded that boiling milk will render the curds digestible, much more so than peptonizing or other treatment.

Carefnl investigation has resulted in the acknowledgment that high fat content of milk has been in many cases, perhaps the majority, the cause of digestive disturbances in infants artificially fed. Milk containing four per cent fat, when diluted to one-half, contains a sufficient amount to promote the normal growth, and most pediatricians have abandoned the milk and cream mixtures for ordinary four per cent milk diluted not more than fifty per cent.

Sugar serves two important purposes in the infant's dietary. First, it supplies a large amount of nourishment on account of its high caloric value and helps to make up for the deficiency in fats. The kind of sugar used is really of little importance, except that most pediatricians and personal experience would advise that either cane or malt sugar be used. Milk sugar is supposed by Finkelstein and Meyer to be the cause of much of the fermentative indigestion of children. Malt sugar is thought to be more easily digested, but a good rule is to use either cane or malt sugar, and when one disagrees, to change to the other. If there is any reason and a good one to suppose that both disagree, dry milk can be used for a time. Sometimes, though seldom, all of these fail, and then resort can be had to malt soup; but, in all cases, get back to one of the others, if possible. In using malt soup, the fact that an ounce has only 90 calories against 120 calories value for cane and malt sugar should be borne in mind.

Diarrhea and vomiting may call for much less food in calories than the usual rule and the temporary omission of sugar entirely. When a baby has been receiving a diet much below its caloric needs, sugar should be gradually added and no gain expected till its full requirement has been reached.

Caloric values in certain instances must be ignored or more or less disregarded.

New born infants require a very diluted formula and, while given a two or three ounce feeding, do not take all, except very occasionally, and rarely gain in weight for two or three weeks, though food can be increased in strength after a few days—four or five—and sugar added. New born infants take a dilution of milk and water in the proportion of one to three, gradually increased till at the end of second week it amounts to one-half dilution, sugar being added gradually. Thus five ounces to fifteen, and gradually every day or every other day add an ounce of milk and let water stay at same till brought up to half and half. Do not add sugar to new born babies' food until yellow milk stools appear and meconium disappears, and then gradually commence about third or fourth day, as stools clear, to add one-fourth ounce at the time till usual formula is reached. In normal infants, abruptly weaned, much the same course must be pursued.

In infants previously fed on artificial food, when changed to cow's milk, the dilution and formula must be below the normal caloric need and gradually brought up.

The same applies to children who are found to be suffering from over-feeding or underfeeding.

Conclusion: Cow's milk forms the most easily obtained and most successful food for infant feeding.

It can be so diluted and manipulated by addition of carbohydrates as to furnish all necessary elements of healthful growth.

The essentials for its successful use are: a source of supply from a sanitary dairy, the exercise of strict cleanliness in the fullest sense in its preparation, and a method of keeping that will maintain a temperature of less than forty degrees till it is to be used.

THE COOPERATION OF THE PHYSICIAN IN PREVENTIVE DENTISTRY.*

By E. J. APPLEWHITE, D. D. S., Newport News, Va.

I esteem it not a small honor to be invited to read a paper before the Walter Reed Medical Society. Would that I had the ability and gift to present for your consideration something that would have a tendency to bring the two professions (if they can be separated) even closer together than they are at present. The subject which I have chosen, to me seems timely and important. Indeed, it is very gratifying to note in recent years what strides have been made in the alleviation of human suffering by the combination of medical and dental research. Medical men of note all over this country, and others, too, for that matter, are today placing more importance than ever before upon the teeth and the part they play regarding disease.

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

Diagnosticians now recognize the fact that a thorough dental history is most essential in order to work out the real cause of the physical ailment.

You, gentlemen, are today putting in the best that is in you, preventive medicine being your goal. Modern dentistry is doing all within its power to bring about preventive dentistry. Dr. Charles Mayo says: "The next greatest step in preventive medicine will come from the Dental Profession." This statement may be true, at any rate, preventive dentistry will go a long way in reaching the goal you seek. Hence, it behooves us to co-operate in every way possible in order that disease may be checked, or at least treated more intelligently by each of us.

Before proceeding further, permit me to present a few facts that the average physician does not seem to know concerning dentistry.

A little more than eighty-five per cent of the men, women, and children of this country have defective teeth and diseased oral tissue (Major H. B. Butler, U. S. P. H. D. C.). Less than fifteen per cent seek dental attention until driven so to do by pain.

More communicable diseases are contracted by the way of the mouth than from all other sources combined.

"Dental disease is the most prevalent disease afflicting civilized man—the more civilized the race, the more dental disease." (Dr. Seccombe, Toronto).

"More diseases are brought about by neglected and decayed teeth than by excessive indulgence in alcoholic liquors, and that there is not one single thing more important to the public in the whole range of hygiene than the hygiene of the mouth." (Osler).

"Four-fifths of the ills that the flesh is heir to is either mental or dental." (Fletcher).

There is more absence from school on account of dental disorders than from any other one thing. This is expensive but our legislators do not know it.

A crippled mouth is the cause of more "repeaters" in our public schools than anything else.

About seventy per cent. of all dental disorders are preventable, or easily corrected.

Dental attention at the proper time is practically painless and not expensive.

The right time to care for a child's teeth is about eight and one-half months before it is born.

The temporary teeth are very important. From them twenty of the permanent ones are developed, and besides they have a function to perform.

The first permanent teeth are erupted at the age of six, four in number. They are the most important teeth in the mouth and on them depends to a very large degree the normal position of the other twenty-eight, as well as the normal contour of the face.

It is the abuse and not use that is the cause of tooth distruction.

These are a few questions that you may have in mind when you are thinking how you can co-operate with the dentist in his effort to make life worth while, happier and healthier. To you men with country practice, let me say that I sympathize with you in having to practice both medicine and dentistry. Many times, no doubt, you wish for a dentist to help you out of a disagreeable task. Preach preventive dentistry to parents, for if they knew one-fifth of the importance of caring for teeth before the toothache stage, as the physician does, you would have to practice less dentistry.

Ignorance, not illiteracy, on the part of parent and child is responsible for the many, many dental cripples in Virginia. This ignorance, thanks to the State Board of Health and the Public School system, is beginning to be dispelled and taxpayers are showing a willingness to spend money for the physical welfare of their children as well as for hog cholera and hoof-disease. It is surprising to know what amount of work is being done along this line by local Health Boards, school nurses, school officials and teachers. Rural Dental Clinics are being conducted in many places and these are receiving the co-operation of the medical men in their respective territory.

It is a deplorable shame how little the parents of Virginia children really know concerning the teeth. This ignorance is not confined to the illiterate, not by any means. Educated, refined and cultured people in cities, towns and country do not know the price they have to pay for dental ignorance. All the help and co-operation from the physician, the trained nurse and educators is needed to

teach our people the importance of safeguarding the oral cavity,—the portal of entry to the human system.

The day has come when the younger generation must receive early dental attention. Give attention, if you please, to a few figures: Here in Virginia, session 1919-1920, there were in the public schools of the State about 478,000 children; there are in the State about 700 practicing dentists—an average of 714 children per dentist, enough to keep the entire dental profession busy for the year. What does this mean? It means just this, that we must have more dentists and all of these will have to spend more time in preventive work and on defects easily corrected than on the restoration by artificial substitutes. That is to say, with the men and money we have at our disposal, the men and the money must be used for caring for the children of the present generation in order that they may be dentally fit for their offspring.

We are all agreed that the most valuable asset that a community can possess is health. Your vocation and mine has to do with the alleviation of human suffering and the restoration of health to our fellow-man who has been overtaken by the calamity of disease, restoring such to usefulness and physical comfort. In doing this, it is often necessary for us to confer one with the other. Physician and dentist must work hand in hand to bring about desired results.

Some of the physical disorders which the dentist has to treat and in which the physician is interested and should feel a willingness to co-operate are:

Toothache:—Its cause: ignorance; treatment; temporary relief only. A very small per cent of the laity realize the risk taken when they allow a tooth to reach the toothache stage. It is surprising to know the number of people who firmly believe that after the pulp (nerve) in a tooth is destroyed that is the end of trouble so far as that particular tooth is concerned. True, there are many pulpless teeth doing good service that are most valuable, comfortable, and not a menace to their owner, but the majority of teeth, after the pulp has been removed, treated and filled or crowned by the most skillful and painstaking dentist, are a possible source of infection, and often a very probable source of systemic disorder.—focal infection, the X-ray reading notwithstanding. Once the pulp of a human tooth is exposed its future usefulness is questionable. The younger the patient the more liable to trouble. In the mouth of a very young patient, it is absolutely impossible to restore that tooth with any degree of certainty. The part you play just here is to warn your patients of the dangers of toothache. Tell them that they should visit the dentist before toothache visits them.

Green Stain:—This is a condition that I deem worth while to bring to your attention. Green stain on the teeth is dangerous. Black, brown, yellow or any other color is unsightly, but not so dangerous as the green. It is due to the condition of the blood, is easily removed and recurrence prevented. Look out for this corrosive stain.

Impacted Teeth:—Impacted teeth are a frequent cause of systemic disorder—especially with the third molars or wisdom teeth,—cause insufficient space for normal eruption, or a diversion from their normal direction by temporary roots or sometimes by some freak of nature. The X-ray will locate impacted teeth with a certainty.

The developing third molar (impacted) will and does very often set up considerable disturbance in its region and elsewhere, due to excessive pressure on the nerve trunks immediately in their wake. Treatment—a surgical operation.

Mal-Occlusion:—Irregular teeth are caused by premature loss of the temporary teeth, thumb sucking, pacifiers, adenoids, mouth breathing, etc. Treatment—remove the cause and supply the proper mechanical appliances. Irregular teeth are unsightly, impair facial expression, render mastication more difficult and are one cause of pyorrhea.

Alveolar Abscess:—Gum boils and ulcerated teeth cause a decomposed pulp, more often than otherwise, sometimes traumatic. Treatment—ventage of gas or pus, by lancing, opening up the pulp canal, or extraction. Instruct your patients not to "wait 'till the swelling goes down" before consulting a dentist. You may save a case of necrosis or osteomyelitis. A swollen face needs immediate attention.

Pyorrhoea:—Riggs' disease affects the peridental membrane and the structure in which the tooth is imbedded. It is a very prevalent and insidious disorder of the oral

cavity and is found in the mouths of all races, male and female. It is most common in the adult, but is frequently noticed in the child.

Cause:—The highest authority to which we have access, The Dental Research Institute of the National Dental Association, has this to say: "Its cause is not known nor is there any known cure, though it can be greatly benefited." There are many things said to be the cause of pyorrhoea, among which we may mention:—uric acid, a lowered standard of nutrition, traumatic injury, mal-occlusion, uncleanliness, faulty dentistry, and others. These, or some of these, no doubt, greatly aggravate the disease, but no one can claim that any one of them is the real cause of the disease. Some men claim that it is a germ disease, others that it is not. My own conviction as to its cause is that it is the lack of sufficient blood circulation in the parts surrounding the teeth.

Treatment in the early stages should be the removal of all irritating matter, such as tartar, particles of food, overhanging fillings, etc., brushing and massaging; thorough cleaning of teeth and gums will prove very beneficial. Regular visits for prophylaxis and polishing are essential. In my hands, salt water, as a mouthwash, has proven to be just as efficacious as anything yet prescribed.

Where the disease has gotten well under way, teeth are very loose and there is a copious discharge of pus from the tooth socket, I believe that in the long run that tooth or those teeth are doomed and extraction is the only cure. The physician's part relative to pyorrhoea is to a very great extent educational. Tell your patients the seriousness of the disease, that it is a source of focal infection, hard to cure, and the advantage of the natural teeth over the artificial substitutes. Pyorrhoea is not accompanied by pain or very much discomfort and the majority of people who have it just simply will not take the necessary dental precautions.

Pregnancy:—This is a condition, certainly in which the physician and dentist are deeply concerned, and must co-operate for the sake of the prospective mother as well as her offspring. Some one has said that "a mother must lose a tooth with each child." Lucky they are, in my opinion, if they lose only one tooth. Just in proportion to the amount of lime salts, tooth and bone making material required for the developing child that is taken from the mother, just in that proportion does she suffer, so far as her own teeth are concerned. During gestation and lactation the mother needs and should have special dental attention, for few of them know the real importance nor what preventive steps to take. No prospective mother should seek dental attention without the dentist's being apprised of her condition. It is an injustice to the mother, the unborn child, the physician and the dentist. During the first few months of pregnancy the teeth are a frequent cause of unaccountable discomfort. They are softer, more sensitive, and more predisposed to decay. While no pregnant woman should be subjected to long and painful dental operation, dental advice and instruction together with temporary dental work are most essential. Too many pregnant women are too timid to tell the dentist of their condition when in need of dental service and the dentist might in his ignorance of the fact do more harm than good. A few words of advice from the family physician as to the care of the mouth and teeth during pregnancy will go a long way towards preventive dentistry.

These, and other disorders and conditions, are of vital importance to the physician and dentist alike and co-operation is essential. More might be mentioned and considered by both of us if time would permit.

May I be permitted to present to you a few things that, in my opinion, are worthy of consideration from a dental standpoint?

Diet:—Personally, I firmly believe that a normal mouth may be kept normal with but little dental attention, provided the right kind of food be propertly prepared and thoroughly masticated. As stated above, it is the abuse and not the use of the teeth that is the cause of their decay and disease. The American people do not chew their food enough. In this day of refining and substitution, many of the modern articles of food require little or no chewing. Many of the substantial foods are only eaten in part, the most valuable portion being discarded and fed to hogs and cattle. Food hunters are always on the lookout for something that is soft and tender. The size of the mouth among our people seems to be getting smaller and smaller, due, I believe, to less chewing than in the generations gone by. Take any part of the human make-

up, put it out of use, fix it so it cannot function, and what happens to that part?

Men, women and children eat entirely too much sugar. In the United States, sugar consumption has increased 500% in fifty years. In 1863, eighteen lbs. was consumed per capita; in 1919, ninety-three lbs. per capita. Countries with lower sugar consumption suffer less from tooth decay and disease. English-speaking people eat more sugar than any other nationality, and dental disease is most prevalent. Children are fed too much with cereals (refined grain) and soft bread. Fruit, vegetables, greens, etc., should be eaten more abundantly. Tough meats, coarse breads and foods less refined are, I believe, one of the shortest roads to preventive dentistry. Cooks, dietitians, teachers of home economics, and domestic science, and, above all, the mothers of our children, must be taught how and what to feed to the man and woman of tomorrow. You, physicians, must do your share in this line of education. Make your people chew by prescribing food that requires chewing. Chewing gum is all right if the gum is tough enough and has not too much sugar.

I believe that with more real chewing, teeth would be better, the mouth larger and there would be fewer impacted third molars, a source of much unaccountable physical suffering.

Dentifrice:—A clean mouth with sound teeth needs no dentifrice save that which is furnished in the right kind of food and drink. Salt, common salt, is one of the best I know of. Lime-water is excellent. Precipitated chalk is good and is the bulk of all good pastes and powders. Never use pulverized pumice stone. If the oral cavity is clean and healthy, it needs no medicine; keep drugs out of such.

Tooth brushes, dental floss, tooth picks. The first should be used twice daily, remembering to brush the gums as well as the teeth: the second is a substitute for the third: and tooth picks should only be used when the floss will not remove the particles of foods, or other substances, that the floss does not.

When it is necessary to administer drugs that are deleterious to the teeth, such as the mineral acids, iron, etc., don't fail to give your patient advice as to the danger and way of prevention.

The X-ray in Dentistry:—I would say in the offset that the X-ray in dentistry is the most valuable discovery in the history of the profession, save anesthesia. It brings to light faults and defects unmistakably that have long been hidden in obscurity. It has located the cause of many disorders heretofore unknown. It exposes to view that which before its advent was an impossibility. While it is of inestimable value to the dentist, enabling him to be of greater service to his patient, its findings are sometimes misleading.

An author has said:—"There is one way, a sure and certain method of ascertaining exactly whether or not the roots of a tooth are infected; or whether a root canal has been properly filled or not,—and this is by the use of the X-ray."

I most emphatically do not believe it. There are conditions about which the X-ray will not tell you "exactly" the truth. It does locate many, many sources of infection and causes of focal infection, but it does not locate them all.

Unless a man is conservative and knows the anatomy, physiology and histology of a structure, he had best leave the X-ray alone. In a number of cases the X-ray will diagnose conclusively; in others it will not, from a dental standpoint. A dental X-ray is best read by a dentist; a fractured femur by a physician. The average physician is liable to make a mistake in being too hasty in informing his patient what is wrong as shown by the dental X-ray. Co-operate better with the dentist; he will be glad to help you out in arriving at a conclusion.

In conclusion, let me say that, if from the foregoing we are enabled to be of additional assistance the one to the other, then my efforts in writing and presenting this far from perfect paper for your consideration have not been spent in vain.

CONGENITAL PYLORIC STENOSIS.*

By G. K. VANDERSLICE, M. D.,
and
G. G. HANKINS, M. D.,
Phoebus, Va.

In considering this subject, we visualize the whole as presenting two distinct conditions, pylorospasm and congenital pyloric stenosis, and probably vaguely believe them to be two

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

different and distinct entities so similar in their earliest manifestation that time is needed and great care for the necessary differentiation of two distinct groups of cases. Holt strongly objects to the term pylorospasm as defining a distinct group. Its use as indicating the sole pathological condition present has led to much confusion of thought, especially as regards the indication for operation, and he believes it responsible for neglect of operation when the golden moment is present. He teaches strongly and urges that the conditions so denominated are merely one of degree and not of kind, and that pylorospasm and hypertrophic stenosis are present in all cases to a greater or less degree, one or other predominating, urging a better division into mild and severe cases.

We believe, however, that pylorospasm may exist alone as a symptom of the hypertonic infant, but when so, other symptoms of hypertonia are present.

Occurrence.

My experience leads me to believe this condition is much more common than most of us have been led to believe and, as seventy-five per cent of these cases are clearly manifested within three weeks after birth and the remaining within eight weeks, it should fall to the obstetrician to make this diagnosis. Within my practice this condition has been recognized as occurring once in 100 cases of child birth, and I am of the opinion that it probably occurs about twice that often, and that many of the early deaths have been taken as difficult feeding cases, infantile atrophy, some congenital abdominal or cardiac abnormality or defect, congenital syphilis, very early and rapid tuberculosis.

Causes.

There is little clearly defined opinion as to the exact cause of this condition, but there are at least three theories.

1. A true malformation or deformity present at birth, consisting of abnormal thickening of the circular muscular fibres of the pylorus, and that the effort necessary to force food through the narrowed and elongated pyloric lumen produces circulatory disturbances resulting in oedema until the combined forces produce a more or less complete obliteration of the lumen of the pylorus (Downes).

2. Congenital embryological defect producing blocking of lumen of pylorus.

3. Pirie believes there is (a) hyperadrenalism, Schafer's experiments showing that injection of adrenalin produces pylorospasm and spasm of the ileocecal valve and rectosigmoid junction, most marked at pylorus; (b) secretory inhibition and absence or diminution of pancreatic secretion. Experimentally, hyperadrenalism is antagonistic to the pancreas. And, when both conditions are present, there is sufficient cause for both primary hypertrophy or persistence of spasm.

The studies of Vincent, Schafer, Elliott, Priestley, etc., make it easy to conceive of an endocrine maladjustment. Keith has shown that the pylorus and the suprarenal medulla are differentiated at the third month, which would give sufficient time to produce hypertrophy by the time of birth.

Ransohoff and Palmer, of Cincinnati, have called attention to the frequent association of enlarged thymus observed at autopsy.

In addition to these causes of speculative character, it occurs nearly always in breast fed babies and is about four to eight times more frequent in boys than girls.

Pathology.

1. Hypertrophy and marked thickening of the circular muscular layer at the pylorus; in a month old baby the pylorus is the size of an olive in marked cases.

2. This thickening of the pyloric fibres is most marked within the lumen of the pylorus, ending very abruptly at the duodenum and, if viewed from below, within the lumen of the duodenum, the pylorus has the appearance, almost of a small cervix.

3. Oedematous thickening and infolding of the mucous membrane of the pylorus increasing the obstruction.

4. Hypertrophy of the whole muscular coat of the stomach with marked thickening clearly observed when compared with the wall of the duodenum below. This thickening and hypertrophy with increased muscular power is the cause of the visible peristalsis and projectile vomiting.

5. Apparently moderate hyperacidity.

6. Dilatation of the stomach until it holds more than normal and with the pyloric closure the small intestines are empty and markedly reduced in size and capacity, giving greatly overbalanced appearance to abdomen.

Symptoms.

1. Vomiting: first simple, later projectile but persistent and monotonous, frequently early, sometimes late and, if one feeding is retained, it is usually vomited with the following feeding.

2. Retention of food in the stomach and dilatation enough to hold two feedings. In lavage always a considerable retention of feeding three hours before is observed.

3. Visible peristalsis associated with hypertrophy of muscular coats of stomach; the peristaltic wave comes from left to right from under the costal margin and goes across upper abdomen frequently, in enlarged dilated stomach, below the level of the umbilicus; the wave sometimes ends near midline and reappears on other side, and disappears in pyloric region.

4. Pyloric tumor, size of olive, sometimes not felt or felt only when experience helps the search, best felt directly after feeding, at the time of active peristalsis or during vomiting; does not vary in size with peristalsis.

5. Constipation or meconium character to stools and always small stools; there is enlarged upper abdomen and empty and contracted lower abdomen.

6. Pain and restlessness observed after food with visible and sometimes audible peristalsis, preceding vomiting.

7. Marked loss of weight.

Diagnosis.

1. Vomiting. Seventy-five per cent of cases begin within first three weeks (twenty-five per cent within three to eight weeks) soon after nursing or while at breast, forcible and projectile.

2. Visible peristalsis, typical, unmistakable immediately after filling stomach, a most important symptom for diagnosis.

3. Palpable tumor most evident when obstruction is complete and felt after feeding and before vomiting.

4. X-ray: especially fluoroscopic with patient horizontal after bismuth meal; visible peristalsis and absence of bismuth in intestines.

5. Stomach tube: with retention of food and absence of bile from all vomitus.

Medical Treatment.

Every patient is first treated medically before resorting to surgery and the duration of medical treatment depends upon the child's tendency to improve, the weight being the best index as to the result of the treatment.

Holt (J. A. M. A., May 26, 1917) states that medical treatment in this condition consits of careful feeding and gastric lavage.

Haas (A. J. D. C., May 1918) reported several cases in which he had used atropin with good results.

Sauer (A. J. D. C., August, 1921) emphasizes the importance of thick cereal feeding and especially the method of preparing the cereal for use.

In our experience, the following method of handling these cases has given the best results:

If baby is breast fed, breast feeding is not discontinued at first; one minim of a 1-1000 solution atropin is given in one teaspoonful of sterile water before each feeding; gastric lavage is done once or twice daily or once in three hours as the case requires. The bowels are regulated with milk of magnesia and enemata given when necessary.

In bottle fed cases and in those that are unable to take breast milk, thick cereal feedings are given with good results. Any of the cereals may be mixed with the milk but farina and barley are the two most commonly used. Atropin, in the 1-1000 solution, may be given in doses from one to three or four minims, either in each feeding or just before each feeding. Atropin must be pushed to the point of tolerance, if necessary, to control the vomiting.

The earliest symptoms of the physiological effect of atropin in infants is a flushing which gives them the appearance of having fever, which sometimes actually exists, dilatation of the pupils, and slight puffiness of the lids.

The untoward symptoms are hyperpyrexia, abdominal distention, flushing, restlessness, vomiting and diarrhea.

The hypertonic infant with symptoms of pylorospasm responds particularly well to atropin treatment. Some of the authorities on plyloric stenosis have obtained such wonderful results with the use of thick cereal feedings and atropin, as to seem to discredit operating except in the most obstinate cases,—cases that continue to lose weight and vomit in spite of treatment.

SURGICAL TREATMENT.

1. Passage of string through pylorus and use of dilating bougie.

2. Loreta's operation divulsion of the pylorus with or without gastrotomy with an abdominal operation, always a more or less dangerous procedure and with recurrence.

3. Pyloroplasty of the Finney type, results best in the few later stage cases that survive infancy without operation and with occasional recurrence.

4. Gastro-enterostomy, always a serious operation, and very difficult with very thin intestinal walls and thick gastric walls.

5. Fredet-Weber-Rammstedt operation: Incision of peritoneal and muscular coats of pylorus, the point of knife beginning near duodenal junction moves towards cardia and along upper curvature: no stitches are inserted, the opening is stretched with handle of scalpel or opening of forceps.

6. Strauss operation: The incision is identical, through muscular coats to gastric mucosa; then this is dissected away from muscular layer with handle of knife, around nearly one-half of circumference of pylorus, and at the limit of dissection the muscular layer is incised from within out toward the peritoneum with longitudinal incision, the length of the original pyloric incision; this layer is then dissected in a retrograde manner back towards the first incision and near it and this dissected flap is everted and its free edge is attached to the free edge of the original pyloric incision, covering the bulging mucosa and this raw muscular surface is covered with omentum flap stretched around the edges.

In all operations (and medical treatment as well), the condition of the patient must be carefully appreciated, with the loss of weight and marked dehydration and loss of body heat and strength in the month old infant, which has never had sufficient nourishment or start of any kind to prepare him for the ordeal; the conservation of heat during operation by bandaging of limbs, etc.; the use of local anesthesia, when practicable, using Butler's floodgate incision; and the careful supply of liquids, by water intravenously or blood transfusions, and the early, careful feeding of liquids after operation.

THE EFFECT OF OUR MODERN WOMEN UPON THE FUTURE GENERATION.*

By W. W. KERNS, M. D., Bloxom, Va.

When Dr. Stubbs notified me that I was expected to read a paper before this Association on this occasion, I was almost tempted to decline at once but, after second consideration. I felt that, although I was simply an old country physician. I would be among friends whose hearts were as true as steel, and who would gladly overlook all mistakes. Upon glancing over the list of officers I noticed that you had elected me 5th Vice-President. I blinked my eyes and took another look, and honestly it made me swell all up with pride to know that I had been honored with that office of the Walter Reed Medical Association, for I feel that through the efforts of these few physicians, who have joined hearts and hands to honor our beloved Walter Reed, will bloom forth an organization whose influence will be felt over the entire State. I also felt that I could grasp the hand of every member here and know that he is indeed my brother.

The subject that I have selected for discussion, "The Effect of our Modern Women (or I should have said American women) upon the Future Generation," is to my mind the most vital subject that not only confronts the physician of to-day but our entire nation as well. Let us go back say thirty or thirty-five years ago when most of us were boys. Compare the women of then with those of to-day. I can remember almost the first lesson my dear old mother taught me and how often she would repeat those words, "My boy, always be kind and respectful to girls and ladies, and more especially elderly ladies." I shall always honor her for those lectures that have meant so much to me in my short life. Do we receive those motherly lectures from our women of to-day?

It is not the modern dress of our modern women that I wish to censure. For health, comfort, and good looks, the modern dress surpasses anything she has ever had and besides we as physicians have nothing to do with the women's fashions. She is going to dress just as she pleases no matter what we

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

say and I can respect her as much in a bathing suit as I can in a drawing room costume.

Let us go back once more to our boyhood days and tell me how many families did you know who had no children; how many who only had one or two. You could almost count them upon one hand, from six to ten, and sometimes fifteen was the usual number; and let me tell you they were not raised on Eagle Brand Milk, Mellin's Food, or any other artificial food. It was a rare thing that a mother did not nurse her own baby. But, what is the condition of things to-day? I dare say there is not a physician within the sound of my voice, no matter how extensive his practice, who has a dozen real American families on his list who have ten or more children. From one to three is the usual number and a great many have none. What is the cry of to-day? We haven't time to bother with children and, if by accident one does happen to come along, the mother has fought and abused nature to such an extent that she either hasn't sufficient milk to nourish her offspring, or else has so many other things to take up her time she doesn't care about nursing it, so about the next day after the baby is born she rushes the old man off to get a couple of nursing bottles and a can of Eagle Brand Milk to feed her baby, and a pint of camphorated oil with a little peppermint with which to dry up her breasts. Then comes the tug of war to raise this baby and, as you all know, the second summer claims a large percentage of them: and you will hear them cry and say at the funeral why did God take our dear baby from us, when we all know that the mother was the sole cause of the baby's death.

After our modern women have had from two to three children she is done. The poor fellow who happens to be the husband of such a woman has either to sleep by himself or not sleep at home at all, and right here is where fifty per cent of our family troubles begin. What is dearer and sweeter than a baby raised from its mother's breast? I can pick out a bottle-fed baby every time, by that peculiar sour breath it has, and I can almost single out the children that have been bottle-fed, they are irritable and crabbed. Can they possibly make strong healthy men and women? Take the negro and the foreign element of this country, it is an uncommon thing to find a family of these with less than six to ten children, and a small percentage of these are bottle-fed. What will this mean in 50 to 100 years from now? Simply this that America as a nation will be a thing of the past.

Let us, as physicians, at least do our part by telling our dear women the necessity of being real American women and mothers. May they wake up to the terrible calamity that confronts us as a nation. May not this beautiful country of ours be over-ridden by foreigners, anarchists and the negro, but may our women stretch out their beautiful motherly hands and say, "By the help of Him who gave me birth I will do my part to rout this great evil." Then, as she marches down through the path of time, led by the sweet smiles of a clear conscience, kissed and loved upon one side by our pure and healthy boys and girls, guarded upon the other by the strong arm of our American men, backed up by the ever helping hand of our American physicians, she shall be called indeed (and rightly so), the mistress of her beautiful country, AMERICA.

THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.*

By H. G. LONGAKER, M. D., Newport News, Va.

This is not an exhaustive study of the diagnosis of pulmonary tuberculosis but singles out here and there a few phases of interest and importance. There is no doubt that many borderline cases will be diagnosed as tuberculosis by one individual and will be discarded by another as not even suggestive of that condition. On the other hand, there are innumerable cases of well defined tuberculosis which are overlooked. The ability to recognize this condition is not to be confined to the individual who makes a specialty of tuberculosis but, as the general practitioner sees by far the greater proportion of all cases, he is the vital necessity to the great fight which is being waged against this disease.

The diagnosis of tuberculosis seems to become more difficult as time goes on. This is explained partly perhaps because the patient presents himself for examination much earlier than in years gone by and partly because of

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

the recognition that influenza, chronic bronchitis, focal infections, foreign bodies in the bronchi, and other diseases, may produce symptoms simulating those of tuberculosis. With fever, well marked physical signs, and bacilli in the sputum, no disease is more easily diagnosed.

The introduction of methods of examining the sputum, the cutaneous and ophthalmic tuberculin tests, the roentgen ray, and the complement fixation tests, have tended toward making us more careful in rendering the decision in favor of pulmonary tuberculosis and, likewise, they have brought out clearly that chronic tuberculosis may be active and of moment, or inactive and capable of great physical stress without relapse.

The methods employed in arriving at a correct diagnosis are (1) Clinical history, (2) Physical examination, (3) Examination of the sputum, (4) Roentgen ray, (5) Tuberculin tests, and (6) Complement fixation tests.

The diagnosis of a tuberculous infection is considered of no moment except possibly in doubtful cases in children under three years of age. Perhaps anyone who has attained adult age has been infected by the tubercle bacillus, but a very small percentage ever develop the disease tuberculosis.

There is but one pathognomonic sign of pulmonary tuberculosis and that is the occurrence of the tubercle bacillus in the sputum. With the ample facilities afforded, it is inexcusable to omit this method of examination. On the other hand, it behooves every physician to ever remember that one negative report on the sputum does not mean that tuberculosis does not exist in that individual. The presence of bacilli in the sputum does not mean that the disease is active; many chronic quiescent cases will show the tubercle bacillus in the sputum although no signs of clinical activity are present. Tuberculosis is often present, sometimes even in widely scattered areas, and at times may be causing marked clinical symptoms without the tubercle rupturing and bacilli appearing in the sputum. In fact, most cases will show symptoms sufficient to warrant the alert diagnostician in making a diagnosis of active tuberculosis before bacilli bearing sputum appears. The very fact that tuberculosis does exist without the bacilli appearing in the sputum is no excuse for neglecting this most important procedure. Sometime ago, a young man presented himself for examination, stating that he had lost some weight and could not perform his usual work without much fatigue. A careful inquiry into his case revealed nothing of importance with the exception of a slight cough. Physical examination was negative. The importance of a sputum examination was emphasized and the first examination revealed many tubercle bacilli. It was thought best to recommend institutional treatment. Some time after he was admitted to the sanatorium, a letter was received stating that the patient had been examined by three members of the staff and that the diagnosis of pulmonary tuberculosis was very questionable in their opinion but that he would be kept under observation. A later letter stated that on the 34th examination of the sputum the tubercle bacillus was found.

The importance of a carefully taken history cannot be overestimated but here one cannot say that the individual under observation is suffering with phthisis simply because one or more members of the family are tuberculous. A history of hemoptysis or of pleurisy cannot be laid aside without a painstaking investigation. Of still greater import is a history of pleurisy with effusion. There can be no doubt that if all cases of pleurisy are kept in bed until they are well and overweight and then kept under sane observation, the incidence of tuberculosis would be materially decreased. Hemoptysis is of greater importance if followed by blood-streaked sputum for several days and almost makes the diagnosis, if there is a history of recurrence. One author has gone so far as to say that in the temperate zone a history of blood spitting means tuberculosis. It is true that local conditions of the nose and mouth, chronic disease of the heart and kidneys, bronchiectasis, pulmonary infarction and aneurysm may cause blood spitting, but at least one will not go wrong if he makes a tentative diagnosis of tuberculosis in every blood spitter, until some other definite cause can be proven. A pulmonary hemorrhage will give no indication whatever of the stage of the disease. One patient will have a severe hemorrhage as the first evidence of the disease, while another will have all the signs and symptoms of cavity formation without having ever coughed up blood-streaked sputum. Stricker says "Soldiers attacked with hemoptysis without special

cause are at least 86.6% tuberculous. In the cases in which the hemoptysis follows special exercises in military service, at least 74.4% are tuberculous. Symptoms are far more important than physical signs. We can place most cases into two groups: one with symptoms and no physical signs, and the other group with physical signs and no symptoms. Of the two, the former are by far the more important." To quote Fishberg "The fact must never be lost sight of that the patient who does not cough, has no fever, has a normal pulse rate and maintains his body weight, with very few exceptions is not suffering with active tuberculosis."

One who relies exclusively on signs of slight alterations in the resonance of the chest and modifications in breath sounds is liable to prove more mischievous to the patient than one who knows little or nothing of percussion and auscultation. A perfect chest is as rare as a perfect man. It is by no means advised to overlook the important data which may be obtained by inspection, palpation, mensuration and percussion, but it is desired to mention particularly some of the findings of auscultation and, of these, perhaps the rale is the most important.

The usual rale in the incipient case is the moderately coarse rale. Rales which are heard on the first deep inspiration and are not persistent are of no consequence. Rales which will not persist after the patient has coughed can be neglected. The rale to be significant must occur in the upper part of the chest and must be present on several examinations. Such rales are of greater import when heard posteriorly on a level with the third vertebra spine than when they are heard above the clavicle or in the first interspace. When the upper parts of the lung are free from disease and the physical signs confined to the base, the physician may reasonably conclude that he is not dealing with tuberculosis, nor should he fear that the disease may turn into tuberculosis, as many patients and some physicians think. There is no doubt that pulmonary tuberculosis can occur without rales. Symptoms often force a diagnosis of tuberculosis and organisms are found in the sputum with scarcely any abnormal physical signs.

Granular breathing, distant breath sounds at the right apex, and prolonged expiration are among the other signs to be noted on auscultation.

The roentgen ray has been of great value in the diagnosis of chest conditions but the pendulum has undoubtedly swung too far until at the present time we too frequently hear physicians say "I am not sure of your chest but we will take some X-ray pictures to settle all doubt." This has been carried further by the laity until now a great many think the X-ray is the first, last, and all, in rendering a decision for or against tuberculosis. Many physicians rely on it almost to the exclusion of all other diagnostic methods. There is no doubt that the roentgen ray may supply information unavailable by other methods of diagnosis. It is a fact that in the diagnosis of early tuberculosis and in the differentiation of active from inactive tuberculosis, the X-ray plate is only of exceptional value. The main reliance is placed by radiographers on shadows indicating airless lung tissue, or parenchyma converted into fibrous tissue, or which has become calcified. Airless lung tissue is not invariably due to tuberculosis; again, changes may be due to healed lesions and, for these reasons, the radiogapher who does not follow his cases to the autopsy table often reports tuberculosis in persons who are and remain healthy. McRae says that "More than any others, radiographers need the salutary lessons of the dead house to correct their visionary interpretation of shadows, particularly those radiating from the roots of the lungs." The x-ray is a help but we must not leave the burden of the diagnosis to a plate. To quote Pottenger, "I have my doubt whether the roentgen ray should ever, except in the hands of a real genius, be relied upon wholly for a diagnosis."

The tuberculin tests are of value if the patient is a child, but no tuberculin test, cutaneous or ophthalmic, differentiates active from inactive disease. We must remember that a positive tuberculin test means merely that the organism has developed a responsive activity to a tuberculous infection, and by no means indicates that the individual has tuberculous disease in the ordinary meaning of the term.

The complement fixation test is still in the stage of experimentation and the very fact that 10% of the patients with a bacillary sputum give a negative complement fixation

test puts it in the realm of the uncertain laboratory procedures.

The simple diagnosis of tuberculosis does not complete the problem. Of still greater importance, we must determine whether the disease is active or inactive, whether the patient needs treatment or does not need treatment, and the nature of the treatment for this individual case.

The cardinal symptoms of activity are fever, rapid pulse, loss of weight, night sweats, lack of endurance, hemoptysis and pleurisy. Some of these symptoms, hemoptysis and pleurisy, are due to the tuberculous process *per se;* the others are evidences of the toxemia manifesting itself in a disturbance of the nerve and endocrin centers. Fever is perhaps the first symptom of active phthisis. A temperature of 99.5° and a pulse rate of 90 are certainly the upper limits of non-activity. Fever is present in practically all cases of active tuberculosis. The reason there are found so many cases of tuberculosis without fever is mainly faulty technic in the taking of the temperature.

Of secondary importance are chills, cough and expectoration. One will be repaid to go into detail concerning the cough. A productive cough is of decidedly more importance than a non-productive cough. A cough that is worse in the morning is still more suggestive. A history of a paroxysm of coughing to the point of vomiting, just after the patient rises in the morning, is of great importance.

In other words, fever, rapid pulse, loss of weight, lack of endurance, and night sweats suggest tuberculosis. If you add to these cough and expectoration which has continued for more than a month, attention must be focused on the lungs. If we can find no more evidence than these, a positive diagnosis of tuberculosis cannot be made. Rales heard persistently and in the upper posterior portion of the lung are almost as conclusive as tubercle bacilli. Parenchymatous lesions of the lung, if seen in the upper portion, are of importance. A history of hemoptysis or pleurisy with effusion which cannot be definitely explained must be diagnosed as very strongly suspected pulmonary tuberculosis.

THE DIAGNOSIS AND TREATMENT OF NEUROSYPHILIS.*

By CHARLES M. BYRNES, M. D., Baltimore, Md.

Because of the intricate structural and functional characteristics of the invaded tissue, syphilitic disease of the central nervous system presents a varied, and often complex clinical picture. The brain, the spinal cord, or the entire cerebrospinal system may be involved; so that it is convenient to refer to the disease as cerebral, spinal, or cerebro-spinal syphilis. A syphilitic neuritis has also been described. It is, however, an uncommon affection, and is thought to depend, in most instances, upon mercurial or arsenical intoxication rather than upon direct involvement of the peripheral nerves.

The spirochete not only exhibits a special affinity for nervous tissue, but may invade more especially the meninges, the interstitial tissue, or the parenchyma. Thus, it is customary to speak of an acute and a chronic syphilitic meningitis or meningomyelitis in which the lesion may be of a focal or disseminated character. The latter type is often difficult to distinguish from the disorder known as insular or multiple sclerosis, and the use of specific therapy[1] in this strikingly analogous disease has not been altogether disappointing.

In the parenchymatous or so-called parasyphilitic diseases, tabes, tabo-paresis, and dementia paralytica, the degenerative changes within the central nervous system are probably dependent upon a syphilitic toxaemia and direct invasion by the specific organism. Occasionally, these more familiar forms of neurosyphilis are obscured by evidences of a combined system disease consequent upon a grave syphilitic anaemia. Finally, a vascular type of neurosyphilis has been described, in which the symptoms are those of cerebral or spinal arteriosclerosis with the accompanying vascular accidents. In this type of the disease there may be no actual syphilitic involvement of the nervous tissue, and examination of the spinal fluid is, in most instances, quite within normal limits.

It is reported that neurosyphilis is occurring in increasing numbers, but it is difficult to determine whether this increased incidence of the disease is relative or absolute. More ac-

*Read before the Walter Reed Medical Society at its meeting in Williamsburg, Va., May 10 and 11, 1922.

curate diagnostic methods and the systematic examination of the spinal fluid have, no doubt, been responsible for the recognition of many cases which had previously been overlooked. These studies have demonstrated that the nervous system is probably implicated at a very early period and, in many instances, during the general dissemination of the infection; since syphilologists have found, from a study of the spinal fluid in a large number of cases, that moderate lymphocytosis, increase of globulin, or a positive Wassermann reaction is not frequently observed during the secondary stage of the disease. These early changes in the spinal fluid are, however, not necessarily accompanied by clinical evidence of injury to the central nervous system, and the condition has, therefore, been designated as asymptomatic neurosyphilis. Klauder[2] is of the opinion that only about ten per cent of syphilitics exhibit changes in the spinal fluid or subsequently develop nervous symptoms; and Fildes, Parnell, and Maitland,[3] from a study of 624 cases of syphilis in all stages, found that 187, or thirty per cent, exhibited abnormalities of the spinal fluid; but eighty per cent of the 187 cases were of the asymptomatic type. While these observations are not without significance, their exact meaning is, as yet, not thoroughly understood. Ravaut maintains that every abnormality of the spinal fluid is evidence of disease of the nervous system; nevertheless, microscopic examination of the nervous tissue in two cases of so-called asymptomatic syphilis has not confirmed this opinion. If, however, there is the slightest suspicion that the nervous patient has been exposed to syphilitic infection, a preliminary diagnostic lumbar puncture should be made, and no case of syphilis, whatever its type or duration, should be discharged without an examination of the spinal fluid since there is the probability that every syphilitic is a latent neurosyphilitic.

In spite of the early recognition of the primary lesion and the immediate adoption of intensive antisyphilitic treatment, it seems that the syphilologist has not yet acquired the means of preventing the subsequent development of outspoken neurosyphilis. It is important, therefore, to make a laboratory study of the blood, and especially of the spinal fluid, in all obscure functional or organic diseases of the nervous system, whether or not syphilis be suspected as an etiological factor. One must be cautious, however, in interpreting the laboratory report. A positive Wassermann reaction does not necessarily establish syphilis as the etiological factor, nor does a negative reaction exclude it. If there is reason to suspect that the disease rests upon some factor other than syphilis, a reported positive Wassermann reaction should always be confirmed; and this precaution is particularly desirable in the so-called asymptomatic disease. When, however, the clinical features are those characteristic of a well-known syphilitic disorder, a negative laboratory report need not revoke the authority of clinical knowledge, or necessarily deter one in the adoption of specific therapy. The importance, then, of accurate clinical investigation, and sound judgment is recognized by Hazen[4] when he states that the Wassermann test is not altogether an unmixed blessing, and Fraser[5] is of the opinion that "the syphilologist is being strangulated by the tyranny of the Wassermann reaction."

Statements of this kind are very apt to be misunderstood; but they are a necessary warning to those who accept, unconditionally, the laboratory report as final, and institute an unrestricted system of therapy with the sole idea of securing a negative Wassermann reaction, and thus proclaim eradication of the disease. It requires little clinical experience to obtain a specimen of blood, and calmly await the report from some distant laboratory. Technical errors cannot always be avoided, and the physician assumes grave responsibilities when he announces a diagnosis of syphilis merely because the Wassermann test is positive. His mistake may be equally grave if he disregards the clinical condition, and concludes that syphilis cannot be a factor when the Wassermann reaction is negative. Occasionally, however, one has to depend entirely upon the laboratory; for there is not only an asymptomatic neurosyphilis, but an asymptomatic general syphilis which is to be discovered only through routine examination of the blood and spinal fluid. It is upon you gentlemen, then, from whom the average patient first seeks advice, that one must depend for the early recognition of the evidences of incipient neurosyphilis; and I am convinced that in many instances a thorough clinical investigation, alone, will serve you better than a Wassermann test unsupported by careful neurological studies.

It may be instructive, then, to review some of the more common nervous manifestations of neurosyphilis. Headache, dizziness, subjective or objective sensory disorders, and the various neurasthenic states are not infrequent premonitory symptoms. Ill-defined mental peculiarities, the more marked psychoses, tremor, speech disturbances, somnolent attacks, convulsions, or a transitory extraocular palsy are often initial features of a previously unsuspected syphilitic infection.

Much importance has been attached to the pupillary reactions; and Lowery and Benedict[6] have made a special study of the pupil in two hundred and seventy-five cases of neurosyphilis. It was found that in seventy per cent., some form of pupillary abnormality existed; and that the Argyll-Robertson pupil occurred with greater frequency in tabes and tabo-paresis. Rasquin[7] finds that changes in the shape and size of the pupil are of diagnostic value. In seventy-nine per cent of eight hundred and twenty-six cases he observed a polygonal pupil with large curved angles, which is said to occur independently of changes in the light reflex. When the abnormality is bilateral, its diagnostic importance is thought to be comparable to that of the Argyll-Robertson pupil. A normal pupil is, however, no assurance that even an advanced syphilitic lesion may not be present; and Spiller[8] has described an instance of this kind, in which the pupillary reactions were preserved through a number of years, but exhibited, a short time before the patient's death, the characteristic Argyll-Robertson phenomenon. Examination of the eye-grounds may reveal the presence of a so-called syphilitic halo which is said to occur early in the course of the disease.

One of the most important and commonly mistaken symptoms of locomotor ataxia is pain. In the beginning, it is usually attributed to neuritis or rheumatism, and, yet, the genuine tabetic pain is distinctive. In its typical form, it is lightning-like, not strictly confined to a nerve course, and situated in well-defined but variable cutaneous areas. Oftentimes the sensitive spot may be covered with a fifty-cent piece; and, not infrequently, the painful attacks are preceded or followed by a variable degree of cutaneous hyperasthesia. Occasionally, the pain is more continuous, and of a neuritic character. The blood Wassermann test may be negative, and examination of the spinal fluid may or may not reveal the true nature of the affection; but lumbar puncture and complete study of the fluid require special training. Search then for irregularly distributed areas of cutaneous hypalgesia, or delayed sensation upon the anterior or posterior thoracic wall. These will usually be found in the second, third, or fourth interspaces, and are very suggestive evidences of beginning tabes. Optic atrophy, gastric crises, impotence, and bladder disorders are other important early symptoms of tabes; and Browning[9] has recently directed attention to a clinical sign often associated with the gastric crises which may be helpful in differentiating them from the other gastric disorders. He finds, upon palpation, an acutely tender spot just to the left of the vertebral column corresponding to the fifth dorsal interspace. It is not known whether the tenderness precedes the gastric attack, but it invariably subsides when the crisis is relieved.

It is, of course, important that neurosyphilis should be recognized in its earliest stages, and, if possible, before there are clinical evidences of damage to the central nervous system. This distinction must, however, rest largely upon a painstaking neurological examination, and a more accurate knowledge of the real significance of asymptomatic neurosyphilis. Nevertheless, until syphilis can be definitely eradicated in its primary and secondary stages, the practitioner who can detect the incipient manifestations of neurosyphilis will meet with most success in the treatment of the disease. The diagnosis, usually, is not difficult, and the adoption of suitable therapy not infrequently compensates one for the thoroughness with which he has conducted the clinical and laboratory studies. May I not, therefore, relate very briefly, the clinical records of a few selected cases of neurosyphilis in which the diagnosis and treatment have been of special interest?

Case 1. M. L. L., a male, married, aged 33, was referred by Dr. T. F. Leitz, December 18, 1920. Complaint: Headache and vomiting. The family history was unimportant, and his previous health had been unusually good. He denied venereal infection and gave no history of secondary manifestations.

The present illness began, December 4, 1920, with intense frontal headache. This symp-

tom persisted and usually awakened him in the early morning. At first, he was entirely comfortable during the day, and was able to continue his occupation; but for three days he had been confined to bed, because of continuous headache with early morning exacerbations. Unannounced periodic vomiting was now an added feature.

Examination: The patient looked ill. All movements of the head were painful; but there was no rigidity, and Kernig's sign was not elicited. The pulse was sixty to the minute. Dr. Leitz was unable to find any abnormality in the thorax or abdomen, and he reported that the urinary analysis and the blood Wassermann test were negative.

The pupils were equal, regular, and reacted normally to light and during accommodation. The margin of the right optic nerve was indistinct in the upper nasal quadrant; the whole disc was congested; the veins were full; and the physiological cup was obliterated. The left optic nerve exhibited similar but less marked changes. With the exception of exaggerated knee-jerks, the neurological examination was, in other respects, quite normal.

The headache, vomiting, slow pulse, and optic nerve changes, indicative of increased intracranial pressure, suggested the probability of brain tumor, and I hesitated, on this account, to advise an examination of the spinal fluid. Nevertheless, the rather abrupt onset of symptoms, the absence of localizing features, and the early nocturnal character of the headache made it seem probable that lues might be the etiological factor. Occasionally, however, vascular cerebral gliomata exhibit symptoms of this acute and indefinite nature. The diagnosis of cerebrospinal syphilis was established by examination of the spinal fluid December 20, 1920. The fluid was clear and colorless; pressure, 180 m.m.; lymphocytes, 75; globulin, ++++; Wassermann, ++++

Treatment: Six intravenous doses of diarsenol, beginning with .4 gm. and increasing to .6 gm., were administered at weekly intervals. These were supplemented by intramuscular injections of mercury biniodid. Following the second intravenous treatment the patient was clinically well; but the laboratory examination upon completion of the series of injections revealed a clear colorless spinal fluid, with a pressure of 180 m.m.; a lymphocyte count of 27; a four plus globulin; and a four plus Wassermann. The blood Wassermann was negative.

Further treatment was discontinued for two months, when the biniodid of mercury injections were resumed and continued for a period of ten weeks. Re-examination then disclosed the following evidences of improvement: Eye-grounds, and neurological examination in other respects, normal. He had suffered, however, from occasional slight headache, and a whistling noise in the right ear.

Lumbar Puncture: Spinal fluid clear, colorless; pressure, 130; lymphocytes, 3; globulin, ++; Wassermann, ++. Blood Wassermann, negative. Mercurialized serum containing 1/50 gr. of mercuric chlorid was then administered intradurally, and examination of the spinal fluid one month later showed a clear fluid; pressure, 200 m.m.; lymphocytes, 3; globulin, +; Wassermann, negative. The headache and subjective disorder in the right ear had disappeared. The patient was advised to return in two months for a second course of treatment but failed to keep his appointment.

Case 2. T. H. W., male, married, aged 36, referred by Dr. C. Bagley, August 25, 1917. Complaint: Convulsions, loss of consciousness, and "smelling bad odors." A history of venereal infection was obtained. The patient was first seen by Dr. Bagley, who found him in a semi-comatose condition, interrupted by repeated vomiting attacks and generalized convulsions. Operation was deferred until the necessary laboratory studies could be made. The blood Wassermann was found to be strongly positive; and the spinal fluid showed marked lymphocytosis, increased globulin, and a complete fixation test. Intensive intravenous and intradural therapy were practiced by Dr. Bagley before referring the patient to me; and, during the three years he was under my care, I was unable to detect any abnormality in the neurological examination, nor did I have an opportunity to observe the patient in a convulsion. Persistent treatment was followed by diminution in the number and severity of the attacks, and, although complete relief was not obtained, he continued to occupy his position as instructor in an institution of learning. Upon only one occasion was an entirely normal laboratory report obtained. During the course of the disease the convulsions were, at times, of the Jacksonian type, and often pre-

ceded by subjective olfactory disorders, which occasionally constituted the entire seizure. During the interval between attacks, nothing abnormal was to be noted.

The usual methods of treatment seemed not to secure further relief, and it was thought probable that the lesion might be a gummatous meningitis affecting principally the left parietal and inferior temporal regions. As a last resort, surgical interference was suggested, but not insisted upon, and, so far as I am aware, was never accepted by the patient or his family. In all probability it would have resulted in little benefit, because of the inaccessibility and extent of the presumed lesion.

Case 3. A male, 47 years of age, married, and the father of two perfectly healthy children, had always enjoyed good health until the onset of the present illness. He admitted several attacks of gonorrhea before the age of twenty-seven, but firmly denied primary or secondary syphilitic disease.

The illness for which he was referred to me, January 2, 1922, began two months previously with subjective tingling and numbness of the right half of the head, face, and neck. After persisting for two weeks these symptoms disappeared from the areas described above, but were followed by numbness in the left arm and, sometime later, by numbness and tingling in the left half of the face, neck, and head. Slight motor disability then made its appearance in the left arm and leg.

His physician, Dr. L. P. Hamburger, found no abnormality of the thoracic or abdominal viscera, and reported that the blood Wassermann was negative. My examination confirmed the neurological findings which he had previously noted. The sensory disturbance was entirely subjective. Examination failed to reveal any abnormality of the cranial nerves; the pupils reacted normally; and no objective sensory or motor defect was noted in either fifth nerve. The left arm was slightly tremulous and ataxic, but there was no sensory loss. Motor power was diminished in both the left arm and leg. The deep reflexes in the legs were exaggerated, and bilateral ankle clonus was obtained. Plantar stimulation produced plantar flexion of the great toe on the right, and typical dorsal flexion of the toe on the left. The abdominal reflexes were obtained with difficulty.

Lumar Puncture: Spinal fluid clear, colorless; pressure, 110; lymphocytes, 10; globulin, +; Wassermann, positive; gold curve, cerebrospinal syphilitic reading. (Dr. C. C. W. Judd.)

Intravenous doses of diarsenol and intramuscular injection of mercury salicylate were administered, and, following the fifth treatment, definite improvement was noted in the sensory disorder. The patient is still receiving treatment; but re-examination following completion of the six doses of diarsenol revealed the following:

Spinal fluid clear, colorless; pressure, 150 m.m.; lymphocytes, 5; globulin, ++++; Wassermann, +; gold curve, fading. (Dr. C. C. W. Judd.)

The numbness had entirely disappeared, with the exception of a small area upon the left hand and fingers. No clonus was obtained at the right ankle, and only a few feeble contractions upon the left side. Plantar stimulation upon the right gave a normal response, and upon the left the response was delayed, but invariably of the flexor type. In all probability the symptoms were dependent upon a bilateral cerebral lesion, more pronounced upon the right side, and affecting largely the post-central region.

Case 4. A patient presenting a similar sensory disturbance of the head was referred by Dr. W. A. Frontz. In this instance the symptoms, with the exception of a positive Babinski toe sign, were entirely subjective, and confined to the right half of the face. The affection had existed for three years with slight remissions, but without marked progression. Venereal infection was denied, and repeated laboratory studies by various physicians had failed to establish a syphilitic condition. Nevertheless, specific treatment had been previously adopted, but without appreciable benefit. The spinal fluid examination furnished evidence of meningeal irritation and, in the absence of other conditions which might account for the pleocytosis, syphilis was suspected; but persistent specific treatment resulted in only temporary relief of the subjective sensory disturbances.

Case 5. Paralysis of one or more of the cranial nerves is a common and sometimes isolated symptom of cerebral syphilis. Usually, the nerve is implicated in an acute meningitis or in a more chronic infiltrating gummatous process. The blood Wassermann may or may not reveal the nature of the affection,

and the history of syphilis is often misleading. Examination of the spinal fluid is, therefore, of special importance. The details of the following case have been previously recorded[10], but the comparatively early involvement of the nervous system, and the unusual type of cranial nerve palsy are my apology for this brief abstract.

A male, aged 29, six weeks after a primary venereal sore, complained of intense headache, sore throat, and a skin eruption. Two intravenous doses of salvarsan were administered at the Brady Urological Clinic, and the patient left for Porto Rico without receiving further treatment. Six weeks later, three months after the initial infection, he again complained of intense headache associated with ringing in both ears. These symptoms were followed the next day by a chill, fever, nausea, and vomiting, and two days later by intense pain in the left side of the face with subsequent numbness in this region. Within the next fortnight the right side of the face became numb without, however, any preceding pain. It was then impossible for him to chew his food. He returned to Baltimore, and examination then revealed complete sensory and motor paralysis of both trigeminal nerves. The neurological examination was, in other respects, entirely normal. The spinal fluid was slightly turbid and under increased pressure; lymphocytes, 740; globulin greatly increased; and the Wassermann test was strongly positive in both the blood and spinal fluid. Treatment, which consisted of intravenous doses of salvarsan and intradural administrations of mercurialized serum, was followed by almost complete return of motor and sensory function in the two nerves.

Total paralysis of the fifth nerve, alone, is rarely observed; but one or more of its branches, or even the entire nerve on one side may be part of a multiple cranial nerve paralysis of syphilitic or neoplastic origin, and neuralgic affections of one or more trigeminal branches are not uncommon luetic manifestations.

Case 6. A male, single, aged 60, was referred by Dr. H. H. Young, April 23, 1915. With the exception of venereal infection during adolescence, his previous health had been good. For the past four years he had been unable to attend to his business affairs, and had become less careful about his personal attire. Memory was said to be somewhat defective.

Examination failed to disclose any memory defect, but he was subject to alternate states of depression and euphoria. There was no evidence of expansiveness, or delusions. The pupils were small and inactive to light. Both reacted during accommodation. The other cranial nerves were normal. Both Achilles jerks were diminished. There was slight incoordination of the lower extremities, and he was unsteady when standing with the feet together and eyes closed. The knee jerks were hyperactive. There was no tremor or speech defect. Pain sense was slightly delayed upon a portion of the trunk and extremities.

Laboratory Study: Spinal fluid clear, pressure, 170 m.m.; lymphocytes, 11; globulin, +; Wassermann, ++; gold chloride test, paretic curve. Blood Wassermann, negative.

A diagnosis of tabes, tabo-paresis, or general paresis was entertained, but because of the paretic gold curve, the condition was regarded by one of my colleagues as most probably that of dementia paralytica. Intravenous doses of salvarsan, and the intradural administration of mercurialized serum were followed by marked improvement in the clinical condition, and the production of completely normal laboratory tests. The patient has been repeatedly examined during the seven years since he was first treated, and, so far as can be determined, his condition has, with the exception of the pupillary reactions and the diminished Achilles jerks, been quite normal.

Case 7. L. P. McG., a male, aged 48, single, was referred by Dr. W. deB. MacNider, Chapel Hill, N. C., July 2, 1916, because of nervousness and peculiar mental features. When the patient arrived in Baltimore, he was depressed and suicidal, and attempted to jump from the tenth story window of his hotel. Venereal infection was admitted. The lips, face, and upper extremities were tremulous, and speech was defective. These symptoms had developed gradually, but had become more pronounced within the past four months.

Examination revealed unequal pupils and loss of the light reflex in the right eye. Both pupils responded during accommodation. With the exception of facial tremor and speech defect, the other cranial nerves were normal. All tendon reflexes were about equally exaggerated. The spinal fluid was clear; pres-

sure, 190, m.m.; lymphocytes, 12; globulin, ++; Wassermann, ++; blood Wassermann, negative.

Both salvarsan and mercurialized serum were administered with resulting complete restoration of mental function. The motor agitation ceased; the spinal fluid became normal in all its phases; and the patient has since continued to occupy a position of academic importance.

This, and the preceding case exhibited some of the features common to general paresis and cerebrospinal syphilis. Occasionally, differentation of the two diseases is quite impossible, and in these two instances it may be assumed that specific therapy was the means of procuring a prolonged remission in general paresis; that the improvement was merely a typical remission of the disease; or that the affection was only a type of cerebrospinal syphilis.

Case 8. J. C. W., male, aged 59, married, was referred by Dr. J. A. Chatard, October 6, 1916, because of repeated vomiting attacks. His general health had been good, but he has used alcohol freely for a number of years. Venereal infection was denied. The present illness began eight years previously with attacks of vomiting and abdominal pain. Within the past year he had as many as ten or fifteen attacks of this character, and had suffered frequently from "neuritis," which had many of the characteristic features of the lightning pains of tabes. Neurological examination revealed the pupillary inactivity, the loss of the tendon reflexes, and the gait of tabes dorsalis. The blood Wassermann test was negative. The spinal fluid was clear; pressure, 240 m. m.; lymphocytes, 72; globulin, ++; Wassermann, +++.

Treatment consisted of intradural injections of mercurialized serum alone; and apparently, by this means, the "neuritis" was alleviated; the gait became more nearly normal; and the crisis was temporarily relieved. Six weeks later a second crisis occurred, and, after persisting for five days in spite of the usual forms of medication, mercurialized serum was again administered intradurally during the height of the attack. The nausea, vomiting, and pain promptly ceased, and the patient remained clinically well for a period of three years. The vomiting then recurred, and was again immediately relieved by an intradural dose of mercurialized serum. The patient later developed a sinus infection which terminated fatally.

The treatment of neurosyphilis is, in general, similar to that adopted in the treatment of the systemic disease. Mercury, arsphenamin, and the iodids are the drugs usually employed; but the method of administration and number of treatments to be given in any one series vary slightly in different clinics. Nevertheless, it is quite generally agreed that mercury and the iodids continue to occupy an essential place in the therapeutic regime. It appears, however, that syphilis of the nervous system sometimes fails to respond to specific therapy when administered by the usual methods; so that a more direct or intradural method of treatment was devised by Swift and Ellis. There is, however, a division of opinion concerning the advantages and disadvantages of direct therapy. Its opponents claim that equally satisfactory results are obtained by the older methods alone. It has been my custom, however, to make use of both the intravenous and the intradural methods of treatment; but, occasionally in selected cases, when the blood is negative, treatment has been confined to the intradural method alone with quite satisfactory results.

Experience has furthermore convinced me of the unquestioned value of the direct introduction of medicated serum; since I have repeatedly observed what appeared to be a stationary stage of improvement following indirect treatment exhibit further progress after intradural therapy; and I have, for the past seven years, continued to use the preparation of mercurialized serum described by me in 1914[11]. During this interval, I have reviewed, with interest, the periodical literature contrasting the results obtained by this and other forms of intradural therapy. The opinion seems to be general, that mercurialized serum procures the most rapid reduction of lymphocytes in the spinal fluid, but that the intense reaction following its administration precludes its general adoption. In my experience, the reactions have been of no greater intensity than those accompanying other methods of treatment. Vomiting has never been a feature of the reaction, nor has it been necessary to resort to catheterization. Ordinarily, the rise of temperature varies between 99°F. and 101°F., and it may be as high as 103.5°F., but in many instances remains within normal

limits. Pain in the legs or buttocks is a not infrequent symptom, but only occasionally necessitates the administration of an analgesic. Very often the entire reaction is so slight that the patient might be discharged from the hospital the day following treatment, although it has been my custom to advise a residence of at least two full days. It is stated that the reaction is intensified with each succeeding treatment, but I have observed a severe reaction after the first treatment, and none at all with subsequent treatments; or there may be no reaction until the fourth or fifth dose.

Finally, I am quite certain that improvement in the laboratory and clinical features is attained more promptly by the use of mercurialized serum; since I have repeatedly obtained after four or, at most, six doses of this serum, results comparable to those secured only after ten or fifteen treatments by one of the other methods of intradural therapy.

That the nervous system is often invaded early in the syphilitic infection can no longer be questioned, and, although clinical evidences of this involvement may not be obvious, every case of syphilis, whatever its stage, should be subjected to a complete laboratory study of the spinal fluid.

A negative Wassermann reaction in the blood is no proof that the central nervous system is not affected, nor does a positive Wassermann reaction in the spinal fluid necessarily indicate actual invasion of the nervous tissue.

A patient suffering from disease of the nervous system should be subjected to a thorough clinical and laboratory investigation; and, in most instances, this should include a study of the pressure, cytology, globulin content, and Wassermann reaction of the spinal fluid. Not infrequently the laboratory fails to establish the presence of syphilis, when the history and clinical examination furnish convincing evidence of a specific disease. Confirmation of the laboratory studies should then be sought and, if the report is persistently negative, the so-called therapeutic test may be worthy of trial.

The number, frequency, and duration of treatments should be determined largely by the clinical and, to a lesser extent, the laboratory conditions in each individual patient; and, although it may be desirable to secure a perfectly normal blood and spinal fluid reaction, treatment should not be indefinitely continued with this sole object in view.

207 *E. Preston Street.*

BIBLIOGRAPHY.

1. Byrnes, C. M. The treatment of Multiple Sclerosis. Jour. A. M. A, 1922, 78, 867.
2. Klauder, J. V. Early Neurosyphilis Asymptomatica with Report of Observations and Cases. Am. Jour. Syph., 1919, 3, 559.
3. Fildes, P., Parnell, R. J. G., and Maitland, R. S. Unsuspected Involvement of the Central Nervous System in Syphilis. Arch. Neurol. & Psychiat., 1919, 1, 231.
4. Hazen, H. H. Practical Observations on Syphilis. Amer. J. Syph., 1922, 6, 16.
5. Fraser, A. R. Some Account of the Responsibility of Intensive Treatment Methods with Regard to the Incidence of Early Neurosyphilis. Amer. J. Syph., 1921, 5, 201.
6. Lowery, L. G., and Benedict, M. K. Pupillary and Reflex Disturbances in Two Hundred and Seventy-five Cases of Neurosyphilis. Jour. Nerv. & Ment. Dis., 1920, 52, 106.
7. Rasquin, E. La forme de l'irregularite pupillaire syphitilique. Ann. d'Oculistique, 1920, 157, 162. (Abst. Arch. Neurol. & Psych., 1920, 4, 224).
8. Spiller, M. G. Syphilis of the Nervous System in Some of its Clinical and Pathological Manifestations Amer. J. Med. Sci., 1917, 154, 523.
9. Browning, W. A Spinal Sign in Gastric Crises of Tabes. Med. Record. N. Y., 1920, 98, 728.
10. Byrnes, C. M. Bilateral and Complete Trigeminal Paralysis Without Involvement of Other Cranial Nerves. J. H. H. Bull., 1916, 27, 138.
11. Byrnes, C. M. The Intradural Administration of Mercurialized Serum in the Treatment of Cerebrospinal Syphilis. Jour. A. M. A., 1914, 63, 2182.

X-RAY AS AN AID TO DIAGNOSIS.*

By R A. DAVIS, M. D., Newport News, Va.

The application of the Roentgen Ray as a diagnostic aid in every field of medicine and surgery has made this method of diagnosis an indispensable one to the clinician. Though the art of roentgen-diagnosis has not yet reached its highest and fullest development, it cannot be denied that it has made tremendous strides, conquering many fields, helping and benefiting the surgeon and physician in numerous ways and, as time goes on, it will increase its contribution to the art of diagnosis. At the present time it is generally conceded that the information which may be gleaned from the x-ray examination is sometimes pathognomonic and characteristic but always valuable either in the negative or positive phase, and, when considered in association with the clinical data, it makes for greater accuracy of diagnosis.

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

The roentgenologist is gradually assuming his proper function and is contented to serve in the capacity of a contributor of a quota of valuable data, but all our clinical and laboratory methods will retain their full value, to the great advancement of diagnostic medicine, only when the clinician learns to properly utilize and interpret the results of the roentgenologist's contribution.

Roentgenology has been brought to its present high state of attainment almost entirely through the efforts of men who have given intensified and highly specialized attention to the subject. No noteworthy exception of this rule can be recalled. This fact alone is ample justification for the existence of roentgenology as a medical speciality. There are, however, other equally important considerations which render its perpetuation as such highly desirable. In unskilled hands it ceases to be an asset, and actually becomes a nuisance. It is realized, of course, that one who is not a roentgen specialist may acquire considerable skill in roentgen diagnosis in certain restricted fields, but as a matter of fact even this is somewhat exceptional.

Unfortunately, the roentgenologist is not always accorded the prerogative of a medical consultant, but is still regarded in certain quarters, both lay and professional, as a special kind of photographer, whose chief function is that of taking pictures On the contrary, he is first and foremost a physician who is specially skilled in the diagnosis and treatment of disease by means of the roentgen ray. His relationship to the practice of medicine is not essentially different from that of any other specialist, which, in addition to intensive training along special lines, presupposes a comprehensive knowledge of the fundamentals of medicine as a whole. This misconception of the function of the roentgenologist is at least one of the factors that has led to a very serious perversion in its practice. This consists in the widespread distribution of the so-called "commercial laboratory" which grinds out "x-ray pictures" at so much per. They are not only a menace to the public weal from a purely medical standpoint, but one of their chief dangers lies in the fact that they will greatly hinder the development of roentgenology along rational and scientific lines. The existence of the commercial laboratory depends in a very large measure upon the patronage of the medical profession itself. Some of the profession support these laboratories with a view to fostering and exploiting their own chicanery, while others do so through a woeful ignorance of the possibilities and limitations of the roentgen ray as a diagnostic aid. There is still a third group which gives them either active or passive support, simply because they have not given due consideration to the evils which such a practice entails.

The oldest and most commonly known use made of the x-ray is in the diagnosis and treatment of fractures. I think all fractures of any character should be at least rayed before treatment is instituted so that the exact condition may be known. This arms the surgeon with information that will make it possible for him to treat his case more intelligently. In fact, in many states, it is looked upon in the courts as negligence if this means of examination has not been utilized. It is oftentimes advisable and necessary to reduce a fracture under the fluoroscope to obtain the proper alignment of the fragments. In my little experience I have seen many such fractures which could not have been reduced properly any other way. Again, quite a few pathological fractures exist unsuspected by the doctor. I had a case referred to me for x-ray examination quite recently, of a fracture of the shaft of the femur in which a general carcinomatosis of the bones was found.

The x-ray has been the means of completely transforming our knowledge of bone pathology. Many so-called cases of rheumatic pains have turned out to be tuberculosis, lues, osteomyelitis, or exostoses. I have seen many cases of persistent pains in certain locations which had been doctored from almost every angle traced by the x-ray examination to exostoses. There is not a small field of usefulness of the x-ray in the diagnosis and treatment of bone tumors. It is often the decisive factor in determining the malignancy of a tumor in cases where it is not practical to secure a tissue examination, not to mention its use in arriving at the location and extensiveness of the invasion.

In searching for focal infection, an examination of the teeth and accessory sinuses is essential in every case. The x-ray will enable one to determine with a great deal of accuracy which teeth or sinus contain the focus. It is not wise or fair to the patient to extract un-

reservedly all dead teeth and a painstaking investigation of the photographs of these questionable teeth with a moderate amount of good judgment should be included in the search. Even when teeth are still vital, it is surprising to note the number of pyorrhea pockets sometimes revealed.

The presence and nature of an esophageal stricture can be determined much better by the x-ray than by the old method of passing sounds into the esophagus. The location and size of diverticula of the esophagus may be readily determined by the x-ray. Much information may also be gained by this method as to the character of the obstruction, as to whether it is malignant or benign.

Cardiospasm is another fairly frequent condition which can be readily diagnosed by the x-ray.

In the abdominal cavity the contribution has been well-nigh revolutionary in its effect upon physiological and diagnostic problems. It is perhaps no exaggeration to say that in no field of internal medicine has roentgenology accomplished so much as in the abdominal diagnosis. The contour, position, and motility of the stomach and intestines in the living were not correctly known until the x-ray portrayed them on the screen. The new facts not only corrected previous findings, but also led to physiological discoveries of unusual value.

The demonstration of gastric and duodenal ulcers, the accurate localization of abdominal tumors, and the determination of intestinal adhesions have become matters of routine. Syphilis of the stomach manifests itself in the roentgenogram by rapid emptying time and a constriction of the smooth outline.

Diverticulitis of the bowel is indicated by pockets, which remain several days in one position. Clinically, this condition simulates appendicitis very closely, according to the authors, and shares honors with stricture of the ureter as a source of "disappointing appendectomies."

Carcinoma of the colon is usually revealed by a constant filling defect, tuberculosis by a failure of the caecum to fill and by the smooth outline of the colon. Adhesions of the intestines may usually be recognized by the points of fixation, spasm after the administration of atropin, and megacolon, redundant colon, and diaphragmatic hernia by typical shadows cast by these abnormalities.

Too much dependence must not be placed on plates alone in this class of x-ray work, for it is here that the fluroscopic examination is all important. I have seen many cases of pressure defect due to the spine called cancer of the stomach by resorting to the plate method of examination alone. It is also important in most cases not to be satisfied with an examination of the stomach alone, but to carry out a complete examination of the entire gastro-intestinal tract. There are many troubles above caused by pathology lower down in the intestinal canal.

In the diagnosis of chronic appendicitis, authors have found direct x-ray examination of the appendix of great value, not only in cases in which suspicion has been cast upon that organ, but especially in the cases of vague abdominal symptoms of unknown origin; in many such cases it has been possible either to demonstrate a normal appendix or to show that it was, or had been the seat of the disease. It is sometimes possible to make a diagnosis of chronic appendicitis from x-ray findings in the ileocecal region other than direct observations of the appendix. Such findings as adhesions of parts, ileal stasis, insufficiency of the ileocecal valve, and spasticity of the colon, have been put forward as affording contributory evidence of appendicitis. Adhesions about the appendiceal region are, of course, suggestive of former inflammation.

In the direct examination of the appendix the points to which attention must be paid are: 1, the filling or emptying of the appendix delay or stasis; 2, shape-constriction and dilatation; 3, fecal concretions vacuoles; 4, mobility; 5, hyperactivity-spasm; 6, tenderness; 7, position.

Radiography has now attained to an important position in the examination of the urinary tract. Front a diagnostic standpoint the information it gives is of the highest importance. Every case of suspected disease should be thoroughly examined before surgical interference is decided upon. There are many more cases of silent stones in the kidneys than you would expect. Many cases with vague pains in the back and abdomen would show calculi if they were subjected to a careful microscopic examination of the urine and x-ray examination of the urinary tract. The

x-ray is of great service in determining the presence of a stone, its position and size, and the prognosis and treatment of a particular case. Much information may be gained also by means of injecting the bladder, ureter and kidney pelves by some opaque substance.

The most outstanding advance of recent date in radiography of soft tissues is the method of producing a pneumoperitoneum. By means of this method astonishing detail in soft tissues is obtained.

In the chest we find a large field of usefulness of the x-ray as an aid in the differential diagnosis of conditions in the thorax. Fluoroscopy determines the size, shape and movements of the heart. A large proportion of aneurisms and dilatations of the aorta would be missed were it not for the roentgenologist. Mediastinal or lung tumors invading the mediastinum are difficult to differentiate from an aortic aneurism.

Pulmonary tuberculosis may occasionally be recognized by the roentgenogram in the absence of all physical signs. Shadows due to syphilis are usually at the base rather than the apex and are more often confined to one lung.

Bronchiecstatic cavities give characteristic markings. The diagnosis of accidental pneumothorax, which may appear very difficult from the physical examination, becomes a very simple matter after an x-ray of the chest. Small and interlobar empyemas cannot be overlooked, and pulmonary abscesses, pleuritic effusions, malignant growths and foreign bodies are easily diagnosed by means of the x-ray.

THE INTERPRETATION OF CARDIAC IRREGULARITIES.*

By J. MORRISON HUTCHESON, M. D., Richmond, Virginia.

Irregular heart action is one of the common problems presented to a physician for solution. It may be the chief symptom of which a patient complains or it is observed only on routine examination and may or may not accompany obvious heart disease. Its presence should, however, demand a certain amount of consideration, and a thorough effort should always be made to assign to the irregularity its proper value in diagnosis, prognosis and treatment.

Up to a few years ago, rather crude ideas prevailed as to the disorders of cardiac rhythm. An irregular heart was simply irregular and usually taken as presumptive evidence of a diseased heart. Unfortunately, these ideas still exist to some extent. The past decade, however, has seen profound changes in our conceptions of cardiac physiology and pathology and with the new knowledge has come a satisfactory understanding of cardiac rhythm and of the disturbances to which it is subject. By means of the electrocardiograph, an instrument rapidly coming into general use in hospitals and clinics, practically all disorders of cardiac rhythm may now be accurately analyzed and classified, and the knowledge gained in this way has had a most profound influence in broadening and standardizing clinical conceptions.

It is my purpose today to attempt to draw from the results of electrocardiographic studies certain lessons which have a distinct bearing on clinical investigations and which enable us by means of relatively simple methods to interpret the common types of cardiac irregularity with a high degree of accuracy.

The first step toward an understanding of the abnormal is familiarity with the normal so, in attempting an analysis of irregular heart action, it is essential always to keep in mind the normal cardiac mechanism. The impulse to contract is known to begin in the sinoauricular node at the junction of the superior vena cava and the right auricular appendage. From this point the contraction spreads through the walls of the auricle and is transmitted to the auriculo-ventricular bundle, or bundle of His, by which it reaches the ventricle, there to diverge along two main branches which arborize and ramify through the subendocardial tissue. The cardiac impulse has then a definite pathway from its origin or pace maker to its destination in the walls of the ventricle. In the normal adult heart, the pace maker emits impulses at rates which average 72 per minute and, the separate beats being evenly spaced, the systoles follow each other in orderly sequence or rhythm. The pace maker is to a certain extent under the influence of the vagus which

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

normally exerts an inhibitory or slowing effect.

I shall not attempt today to deal with abnormal rates, tachycardias and bradycardias but shall consider only those conditions in which the beats are irregularly spaced, strictly speaking, disorders of rhythm. These are commonly of three varieties, due to different causes and indicating different plans of management.

The first type of irregularity is known as sinus arrhythmia because it originates in the pace maker and consequently affects the whole heart. It occurs most frequently in children and is often called juvenile arrhythmia, but it is also found in adults particularly the neurotic. Sinus arrhythmia is due to vagus influence and its most striking clinical feature is its relation to respiration. There is a constant "waxing" and "waning" of heart rate usually quickening during inspiration and slowing during expiration and these changes may be exaggerated by deeper breathing. The changes are usually slight but at times they may be so pronounced as to give the impression of a very irregular heart. This condition does not indicate any cardiac pathology and calls for no treatment. It can be abolished by atropine, by mild exercise, or anything that lessens vagal tone.

The second type of irregularity is that due to premature contraction or extrasystole. This condition may be found in perfectly normal hearts but occurs more frequently in hearts with organic disease. It is due to increased cardiac irritability giving rise to abnormal foci of contraction which may be located in auricle, ventricle or junctional tissues. In other words, an impulse to contract arises outside the normal pace maker and produces extra contractions in addition to the normal rhythm. These extrasystoles occur as a rule in a disorderly fashion but at times they may be so interpolated between normal beats as to resemble some sort of rhythm. Examples of this are the coupled and tripled beats where extrasystoles replace every second or third cardiac contraction.

Premature contraction can be produced experimentally by an induction shock to any portion of the heart muscle, or by the intravenous injection of various salts. They have also occurred after diminishing the circulation in the coronary vessels.

The recognition of premature contraction clinically is as a rule easy. Its outstanding characteristic is the premature beat disturbing the normal rhythm and shortening the interval just preceding it. It is usually followed by a compensatory pause or lengthening of the succeeding interval as the normal beat which should have occurred has been lost in the premature contraction. Extrasystoles are, as a rule, most numerous when the rate is slow and, as the rate is increased, they tend to disappear so that with a rate as high as 120 they are not often found. Exceptions to this rule are encountered in grave myocardial disease where premature contractions may increase in number as the heart rate increases.

Premature contractions should always be studied with the stethoscope over the heart as the extrasystolic first sound is usually sharp and distinctive. Not infrequently this beat may be heard but, as the contraction is feeble and not capable of opening the aortic valves, no pulse is produced in the peripheral arteries.

When premature contractions accompany definite heart disease, they require no special treatment. When they occur in individuals with otherwise normal cardiac mechanism, some toxic cause should be sought for, such as over-indulgence in tea, coffee or tobacco. Occasionally they prove annoying, especially to neurotic persons, and these cases require careful reassurance and possibly sedatives, such as bromides.

The third common irregularity is auricular fibrillation, a disturbance in which the auricle as a whole fails to contract but the separate muscle fibres act independently and carry on a series of rapid spasmodic twitchings. The impulses reach the bundle of His in enormous numbers so that comparatively few can be transmitted to the ventricle and these in an absolutely irregular order. The result is that the ventricle contracts rapidly with an entire absence of rhythm, and many beats fail to reach the wrist. Should fibrillation affect a ventricle, death would ensue promptly as no complete contraction would occur.

The recognition of auricular fibrillation is, as a rule, possible by ordinary methods, and is of great importance clinically. It always indicates serious disturbances of the cardiac mechanism and its presence probably affects the mortality materially. Auricular fibrilla-

tion is also a condition in which therapy is effective, its result depending to a great extent upon the promptness and thoroughness with which it is administered.

The clinical features of aricular fibrillation are totally irregular heart action, and the failure of many beats to reach the radial pulse. (Pulse deficit.) "The pulse is a medley of beats of many sizes, an intimate mingling of changing pauses; now the beats are almost uniform in strength and spacing; now feeble pulsations chase along rapidly; now the pulse is lost; now it returns with increased vigour. It is when the rate is slow that close attention and more experience are asked, for with slower rate the disorder is less pronounced." (Lewis). Fibrillation may at times be confused with frequent premature contractions but, if there is doubt, the distinction can usually be made by increasing the rate. If the irregularity and pulse deficit persist or increase with more rapid rate the condition is fibrillation rather than extrasystole.

Auricular fibrillation frequently accompanies obvious decompensation but, when it occurs alone, it may be regarded as evidence of impending failure and treatment instituted. Rest is, of course, to be applied and by lessening the systemic demands on the cardiac muscle, it often produces gratifying results without the help of drugs. In no cardiac disorder, however, and in few other diseased conditions does a drug act with more certainty than does digitalis in auricular fibrillation. This effect was noted in medical literature long before fibrillation was ever understood and there is no doubt that upon its influence in this condition a large part of the reputation of the drug depends. Digitalis improves fibrillation by depressing conductivity in the bundle of His and blocking many of the haphazard impulses coming from the auricle. It does not affect the fibrillating auricle directly but, by cutting down the number of impulses going to the ventricle, it slows the ventricular rate, thereby allowing more complete contractions, and prolonging diastolic rest.

The effect of digitalis therapy in fibrillation depends to a great extent upon its proper administration. It should be borne in mind that the object to be attained is slowing of the pulse and reduction of pulse deficit and, if these do not happen, there is apt to be something wrong either with the drug used or with the method of using it. It is now generally known that the more rapidly digitalis is administered the more quickly its results appear and it is, therefore, desirable in urgent cases to use as rapid a method as safety will permit. There are many good preparations on the market both for oral and intravenous administration. In my own practice I rarely use any except the powdered leaves or the tincture, taking care to obtain as reliable a preparation as possible. In very urgent cases where digitalis has not been previously given, I prefer strophanthin in the vein in doses of gr. 1/100. In using digitalis, one may give an amount equivalent to three drams of the tincture in twenty-four hours, or even more. In cases that are not acutely urgent, however, smaller doses such as twenty or thirty minims every four or six hours are preferable. The drug should be pushed either until the desired result is obtained or until toxic symptoms appear. When the apex rate falls below 90, with a radial pulse of 80 to 85, an average good result has been obtained and the digitalis may be stopped to be resumed in smaller doses when the rate increases. It should be remembered that one of the effects of digitalis poisoning is disordered rhythm and that this may be of any of the three varieties described. When, therefore, a new type of irregularity appears during intensive digitalis therapy, the drug should always be suspected.

Recently, quinidin has attracted widespread attention by its unusual effect on auricular fibrillation, an effect entirely different from that of digitalis. Quinidin is apparently a depressant and, by diminishing irritability, it causes a cessation of the fibrillation in about half the cases. It is perhaps not a safe drug for clinical use but its action has opened up a new aspect of cardiac therapy the study of which bids fair to yield valuable results.

The three types of arrhythmia just discussed make up the vast majority of irregular hearts. The clinical methods described for their recognition are by no means final but suffice in most instances, provided they are earnestly applied. As in other cardiac examinations, unless one has a clear conception of what he seeks, he is apt to find little. There are other types of irregularity which are comparatively rare and combinations of the common ones that are difficult and usually impossible of recognition except by graphic meth-

ods. Nevertheless, the knowledge that most arrhythmias can be classified by simple means should stimulate painstaking investigation on the part of the clinician with the realization that such studies will result in far greater precision in diagnosis and treatment.*

209 *Professional Building.*

*Note.—This paper was illustrated by lantern slides of electrocardiograms showing normal and abnormal ryhthms.

FOCAL INFECTION AND ITS RELATION TO OBSTETRICS.*

By SAMUEL DOWNING, M. D., Newport News, Va.

In recent years the data which have been accumulated in support of the view that infectious foci give rise to symptoms apparently unrelated to the site of the focus are too abundant, at this time, to require establishing it as a fact. There is no class of cases that demands a more thorough diagnostic study, both constructive and eliminative, before attempting to define the etiological factor and to give a correct prognosis and method of treatment.

The discovery of a single focus should not terminate the search, but all possibility of a focus elsewhere should be eliminated. The teeth, tonsils, lymph nodes, accessory sinuses, gall bladder, appendix, seminal vesicles, prostate gland, and uterine appendages, may be mentioned as the popular sites for this type of infection.

Inasmuch as the term "Focal Infection" has intimate relations with so many subjects, I have limited this paper to a brief outline of "Focal Infection and Its Relation to Obstetrics."

Talbot has defined a focus of infection as a colony of pathogenic bacteria within the tissues of the body, in the process of active multiplication. This colony of bacteria is kept alive by the destruction or digestion of th neighboring tissues of the body, and there is a by-product of this growth known as bacterial toxin, which is known to be antagonistic to the proper functioning of the body cells. In any of these colonies the bacteria may migrate into the blood stream and, in this way, be scattered to all parts of the body to cause disease in organs remote from the original focus.

There are many who have closely studied this stage, and believe that such migration is of only occasional occurrence, but the absorption of bacterial toxins into the blood stream is, to a certain degree, always present.

Take every other great discovery and, when the principle has gained acceptance, it has been overworked and applied without judgment. There are, as we all know, many complications to be dealt with in a pregnant woman which are in no way related to focal infections. But, on the other hand, it is believed there are many complications, at one time obscure as to etiology, which at this time can be attributed to a focus of infection somewhere within the body tissues.

From a prophylactic standpoint, it is my belief that every pregnant woman should be given a very careful and thorough examination, regardless of symptoms. This examination should consist of careful history taking and a thorough physical examination. If any focus of infection is found, it should be eliminated at the earliest possible time. Always, included in this, should be a thorough examination by a dentist for any possible site of infection about the teeth.

The teeth are especially emphasized in this class of cases. It has been clearly demonstrated by those authors who have made a study of infections of this character that the teeth harbor these foci more commonly than do the tonsils, sinuses, ears, etc., and that, on the whole, the infections about the teeth are of greater potential danger than any others.

The X-ray has demonstrated that a high percentage of saved teeth have abscess formation at the ends of the roots. An abscess at the end of a crowned tooth is different from a decayed tooth. In a crowned tooth the abscess must drain into the blood stream. In a decayed tooth there is likely to be some drainage into the mouth.

It is impossible to produce conclusive evidence that any given breast abscess was ever due to a septic embolus which had freed itself from a focus of infection elsewhere. However, it has been the experience of many to observe a breast abscess develop without any evidence of sore or cracked nipples. In cases cited, breast abscesses have developed from two to three weeks after delivery, although the baby died at delivery, and the nipples had been given careful attention both previous to, and after delivery.

*Read before the meeting of the Walter Reed Medical Society at Williamsburg, Va., May 10 and 11, 1922.

Breast abscess is much less common than that class of symptoms known as plugged ducts, or threatened breast abscess. One writer cites a case of a breast-fed baby that was not gaining, and had little pustules on its head and body. The mother had previously had two attacks of threatened breast abscess. An X-ray of the teeth, in this case, revealed several apical abscesses. He further cites other cases of this nature which upon examination disclosed infectious foci in other tissues of the body. However, abscessed teeth was the etiological factor in most cases.

Pyelitis is another complication which in all likelihood arises from focal infection. It has been demonstrated that bacteria injected into the blood stream of an animal, otherwise aseptically wounded, have a tendency to appear in and inject the aseptic wound or weakened part.

It is also true that tissue in the process of production has a weak resistance to infection. This being the case, it is probable that, if bacteria in the blood stream reach the placenta, they may cause an inflammatory condition of the villous membrane. The sluggishness of the blood stream at this point would tend to make the chances of infection more likely. If this be the case, a large percentage of uninduced miscarriages are primarily due to this cause.

As far as recent teaching has gone, the spirochaeta pallida has been granted the exclusive privilege of passing the villous membrane and infecting the fetus. If it is ever conclusively proven that other bacteria pass the villous membrane, then a focus of infection capable of throwing bacteria into the maternal blood stream becomes a danger to the life and welfare of the fetus as well as the mother.

Hydramnios, which is frequently associated with the malformed and lacerated fetus and toxemia of pregnancy, is probably a result of the same infective process. It has been demonstrated that, in a high percentage of the newborn, the mothers have marked infectious foci, but most often the site of infection was in the teeth, and a large percentage of these mothers have shown signs of toxemia during their pregnancies.

Naturally the metabolic processes of a pregnant woman are much in excess of the normal and, likewise, there must be a corresponding increase in the waste products excreted. In order to prevent a backing up of these waste products in the system, the kidney reserve power must be called into play. If the kidney function is hindered by the toxins of chronic sepsis in the blood stream, these may be sufficient to retard the kidneys in their elimination of the waste products of the developing pregnancy.

Along these lines, Slemons cites the case of a woman, age 39, who had a bad upper wisdom tooth and several other devitalized teeth. She had been pregnant three times. Her first pregnancy went to full term and was associated with uremic poisoning and pyelitis. Her second pregnancy resulted in a miscarriage at two months, associated with edema. Her third pregnancy resulted in a miscarriage at the end of five months, followed by several months of anaemia. At this time, her fourth pregnancy, she developed signs of toxemia, and later, at five months, profuse bleeding. He packed the vagina, and when the packing was removed, the placenta came with membranes intact. The whole center of the placenta was destroyed and showed signs of old hemorrhage. He believes that this infection had its origin from the infected teeth, and dated back to her first pregnancy. She was negative for syphilis. He strengthens his conclusion by mentioning other cases of a similar character.

No attempt has been made to isolate a specific organism in explaining the infectious cause of eclampsia, but many sources have been described which tend to indicate the development of such a process. Some advance the theory that the primary cause of eclampsia is not to be sought in the products of conception.

Prompted by the findings revealed by X-ray examinations of the teeth in one of his cases, one author has subjected a series of 97 cases of toxemia of pregnancy to the X-ray, and claims to have found evidence of chronic sepsis in the teeth in all of the cases without a single exception. He believes that there is a relationship between chronic sepsis and the incidence of the disease, by the fact that in the majority of his cases tested, there were signs of activity in the dental pus pockets just preceding or complicating the disease, and that the severity of the symptoms is not generally proportional to the amount of chronic sepsis present.

It is conceded by all that the presence of a

chronic septic condition has a secondary effect on the kidney. The toxins of an acute infection produce an inflammatory condition in the kidneys inhibiting their excretory functions.

Talbot believes that the symptoms of the toxemia of pregnancy are caused by the retention of the normal physiologic waste products of the developing pregnancy, being caused by the impaired functional power of the kidneys. This damage has been brought about by the toxins of chronic sepsis in the blood stream, and in this way a vicious circle is established.

To sum up:—The toxins of chronic sepsis, by their effect on the kidney function, cause a retention of the normal waste products of the body. These waste products, it is assumed, are injurious to the excretory function of the kidney when these are present in abnormal concentration in the blood. Nature's effort to improve this condition is evidenced by the rising blood pressure, which is now accepted as the early sign of the presence of toxemia.

Many cases are on record which demonstrate good results obtained in cases of arterial hypertension by the removal of infectious foci. Cases of albuminuria, it is believed, have been cured by the same means.

It is true that the term "Focal Infection" is, comparatively speaking, a new subject, and there are still many who are exceedingly skeptical as to its relation with other diseases, but, to my mind, one needs to be a believer of only a part of the literature which has been submitted within the last few years, to realize the necessity for a removal of every known focal infection when associated with pregnancy.

118 *Twenty-sixth Street.*

THE NECESSITY FOR THE DETERMINATION OF THE ORIGIN OF JAUNDICE BEFORE SURGICAL TREATMENT.*

By D. W. AND ERNEST S. BULLUCK, M. D.,
and
R. H. DAVIS, M. D., Wilmington, North Carolina.

While agreeing that all jaundice is not due to hepatic obstruction, most of us are inclined to assume this as a working hypothesis in the study of this symptom. We fail to realize that the gall bladder and the ducts are but the excretory tubes for substances arising in the abdominal organs—treating as primary conditions the terminal states that result from morbid activities on the part of the viscera. This is illustrated by Mayo's report that sixty per cent of his cases splenectomized for hemolytic jaundice also had gall stones.

Investigations are revealing that the various types of hematogenous jaundice—hemolytic jaundice, Hanot's disease, splenic anemia, and pernicious anemia—are more frequently encountered than was previously supposed. Discarding systemic infections, intoxications, poisons and other conditions in which the hepatic parenchyma is directly affected, *the hemolytic complex causes most of the jaundice relegated to our care.* Only a small percentage of the cases show the severe crisis and white stools of empyema of the gall bladder or obstruction of the common duct. Applied to such cases, the present surgical views are certainly correct. However, it should be borne in mind that the recurrent hepatic crisis of hemolytic jaundice is accompanied by pain and tenderness in the epigastrium, tenderness and enlargement of the liver, temperature and leucocytosis. Symptomatically, the difference seems to hang on the white stools and these are found only in the more complete obstructions. When no obstruction can be demonstrated, the supposition that the stone may be lodged in the ducts within the liver is hardly tenable, since McMaster and Rous have shown that more than three-fourths the liver in the dog or monkey may be put in stasis without tissue icterus, showing that a small part of the organ can function for the whole.

The so-called catarrhal jaundice does not seem to be due to an inflammatory edema that obstructs the ampulla of Vater, as classically described. In these cases we find that the simple insertion of the Lyon's duodenal tube delivers an excess of bile. Cases who are operated, in whom the gall bladder is found to be normal and the appendix removed on suspicion, belong to this hematogenic group, as do those cases that refuse operation and never have recurrences. A similar origin is suggested when jaundice and anemia suggest a possible malignancy that can not be located. Such a case recently autopsied showed the most intense pigmentation of the tissues with no demonstrable lesion except an enlarged spleen. When jaundice persists or recurs after the removal of gall stones, the supposition is

*Read at the meeting of the Medical Society of the State of North Carolina, at Winston-Salem, April 25-27, 1922.

that one might have escaped removal, but secondary operations are seldom done, and the patient generally clears up. In such instances, the post-operative jaundice was but the persistence of the original hematogenic condition, the stones being merely the result of previous attacks, and not so often from local infection as from faulty hepatic metabolism, resulting in a concentration of the bile and a high cholesterin content. If, however, the colon bacillus complicates, the typical surgical gall bladder develops. The recurrence of hematogenous jaundice offers a plausible explanation when the return of this symptom is thought to be due to kinking or stricture of the common duct by the contraction of adhesions.

This may seem to be an academic explanation, in which the frequency of hematogenous jaundice is overestimated, but when we remember that most cases of jaundice yield excessive quantities of bile from the duodenum and that sixty per cent of hemolytic icterus may show gall stones, the possibility of confusion becomes more evident. If true obstruction exists or severe infection or retention in the gall bladder are encountered, these must unquestionably be treated in the usual way, but this does not apply to mild cases of jaundice with brown stools, bile in the duodenum, increased *fragility* of the red cells and urobilin in the urine.

Jaundice may be obstructive or hematagenous and its treatment should depend upon the source. Our experience with Lyon's tube has been that in most cases of jaundice an excess of bile is delivered from the duodenum. The bilirubin from this is converted by normal agencies into urobilin which, when in excessive amounts, is absorbed from the digestive tract, carried through the portal to the general circulation, and eliminated by the kidneys. The presence of this substance therefore indicates that the jaundice is not obstructive. Increased *fragility* of the red cells indicates that the origin of the disease is in the spleen.

It seems that we are gradually losing the liver, that the routine use of the duodenal tube and tests for *fragility* and urobilinuria will prevent the removal of the gall bladder when it should have been the spleen, or from draining it when this can be accomplished without adhesions or mortality, by the duodenal tube.

We believe that, if jaundiced patients with brown stools are referred to our medical colleagues for *extended* study and treatment, their recovery will be accelerated, the frequency of operation lessened, and by the early and proper drainage of the gall bladder and ducts, many patients will never reach the neglected terminal stage when severe infection or obstruction converts them into true surgical cases.

Analyses, Selections, Etc.

The Diagnosis of Hysteria.

Head (*British Med. Jour.*, May 27, 1922, page 827) discusses in a most comprehensive and practical manner the recognition of the protein conditions accompanying this disease. His conclusions are based on a wide experience, especially with the war neuroses. He discusses a branch of morbid psychology of profound importance to every practitioner: "For no branch of medicine is free from the puzzling manifestations of hysteria."

He discusses in considerable detail what he terms the "Positive signs of hysteria." It is not within the province of this review to detail these, but a few examples suffice to illustrate the clarity of his analysis.

Disorders of speech were among the commonest hysterical affections due to war strain. "The patient is imbued firmly with the idea that he cannot speak. Although his voice might be reduced to a whisper, he could cough loudly, for from a psychological point of view the resonant sound of cough has nothing to do with articulate speech."

Various types of spasm and paralysis are discussed with simple tests for detecting their hysterical nature. As an example: "While he (the patient) is standing steadily give the sudden command, 'Kick out your good leg.' This he will do although it necessitates balancing himself on the affected foot."

Disturbances of sensation are at times the most confusing ones, especially when tender areas are found in the abdominal zone. "Let us imagine that the patient has a tender spot in the right iliac fossa, simulating that caused by the appendix. He will complain that the point of a pin dragged quickly across the skin causes exquisite pain. Stimulate him over this part with cotton wool and he will not

uncommonly react excessively. It is the *position* of the *tender spot* and not the physiological nature of the stimulus which dominates his consciousness."

Retention of urine sometimes forms a troublesome complication. "It is well to remember that incontinence of urine *never occurs in uncomplicated hysteria.*"

In discussing the mental causes of these physical manifestations, he states that a 'Close analysis of these positive phenomena shows that they depend on three mental factors; Proneness to auto-suggestion, a negative attitude to orders from without, and a tendency to the state known as 'dissociation'."

His comments on treatment are most timely.

"Avoid thinking in terms of surgery when dealing with functional neuroses."

"Some diagnoses such as a 'floating kidney' are more deadly than the disease."

"I would say to all who have to deal with these morbid conditions, be as honest in thought as you would be naturally in deed."

Wm. B. P.

Pyelitis of Pregnancy.

From a study of fifteen cases of pyelitis of pregnancy, Fred M. Hodges, of Richmond, agrees with the majority of writers that the condition is secondary to pressure on the ureter by the uterus, but disagrees with the assumption that the right side only is most commonly affected, having found the condition bilateral in nearly every instance. All of his cases except one showed a bilateral colon bacillus infection. He found little impairment of kidney function in these cases despite the colon infection. While improvement followed evacuation of the uterus, he does not advocate this measure, but reports marked benefit with early relief of symptoms from the use of pelvic lavage, using silver nitrate, mercurochrome, or formaldehyde. He draws attention to the fact that often, despite functional and symptomatic recovery, the kidney pelves are permanently damaged and future pyelograms may present bewildering evidence, unless the past history is carefully considered. (*Amer. Jour. Roentgenology*, June, 1922, No. 6).

A. F. R.

The Prevention of Simple Goiter in Man.

Kimball (*Am. Jour. Med. Sci., May*, 1922, CLXIII), recounts his work undertaken to establish the statement of Marine and Lenhart that "simple goiter is the easiest of all known diseases to prevent." He sets aside as untenable the infectious theory of McCarrison and others, and concludes that the immediate or exciting cause of endemic goiter is a lack of iodine in the organism. The public schools of Akron were chosen for the experiment. Illustrative of the incidence in schoolgirls of that city, of the first 3872 girls examined: Normal thyroids, 1688, 43.6 per cent; slightly enlarged thyroids, 1931, 49.9 per cent; moderately enlarged thyroids, 246, 6.3 per cent; markedly enlarged thyroids, 7, 0.2 per cent.

In April, 1917, the first prophylactic treatment was administered. In November, 1917, a second examination was made. (764 had taken the prophylaxis, and 1879 had not.) There was not a single case in which a normal thyroid increased if the pupil was taking iodine, while among those not taking iodine, 26 per cent of those marked normal in the first examination, showed definite enlargement, some already having developed moderately large goiters. Even more than a prophylactic action was shown by the results—just one-third of the "small goiters" had disappeared, and one-third of the "moderate goiters" had decreased 2 cm. or more. These figures were equalled, and in some respects improved upon, when the treatment was carried out on a larger scale. The method consists of the administration of 2 gm. of sodium iodide given in 0.2 gm. doses daily for ten consecutive school days; repeated each spring and autumn.

There are three periods when simple thyroid enlargements most commonly occur, namely: (a) fetal period; (b) adolescence; (c) pregnancy. Prevention is simple in any period. Kimball holds that prevention, in the fetal period and pregnancy, is properly the responsibility of individual members of the medical profession; and that in the adolescent period, it should be a public health measure. This type of goiter is approximately six times as frequent in girls as in boys. "The maximum of prevention, coupled with the minimum of effort would be obtained by the administration of iodine between the ages of eleven and seventeen years."

There were no ill effects of any consequence in the several thousand cases. There was

not a single instance of exophthalmic goiter, nor any evidence of a nervous irritability simulating it. There were eleven cases of iodide rash, six so mild as not to interfere with the treatment, and the remaining five promptly cleared up when the treatment was stopped. Due precautions were taken in securing authority of school boards and, in addition, individual permission of parents.

Kimball can see "a few generations hence, the closing chapters on endemic goiter and cretinism in every civilized nation of the world."

In 1913, Clark examined 6432 school children in Virginia and found 817 cases of goiter, or 12 per cent of the number examined. (Clark, T., and Pierce, C. C.: Endemic Goiter. Its Possible Relation to Water Supply, *Public Health Reports*, 1914, 29, 939). Presumably this survey was made in those parts of the State where the condition is more common. J. H. S.

Proceedings of Societies

Virginia State Board of Medical Examiners.

Of the fifty-seven applicants who went before the State Board at its June meeting, all made passing grades and were granted certificates. Of these applicants, thirteen were graduates of the Medical Department of the University of Virginia, twenty-five of the Medical College of Virginia, and nineteen of various schools.

These new doctors who are now entitled to practice in Virginia are:

Dr. Walter Paul Adams, Norfolk, Va.
Dr. Emmet P. Bray, Richmond, Va.
Dr. Mary B. Baughman, Richmond, Va.
Dr. Fred L. Benton, Alexandria, Va.
Dr. W. C. Boylston, Norfolk, Va.
Dr. Ambrose McC. Brown, Buena Vista, Va.
Dr. Isaac A. Bigger, Jr., University, Va.
Dr. Charles M. Caravati, Richmond, Va.
Dr. Robert F. Cline, Richmond, Va.
Dr. Forrest P. Coombs, Morgantown, W. Va.
Dr. Peyton M. Chichester, Richmond, Va.
Dr. J. L. Campbell, Bristol, Tenn.
Dr. William E. Dickerson, Richmond, Va.
Dr. P. G. Fox, Richmond, Va.
Dr. W. R. Gardner, Star, Va.
Dr. Avery B. Graybeal, Grassy Creek, N. C.
Dr. William S. Hadley, Norfolk, Va.
Dr. John S. Horsley, Richmond, Va.
Dr. Issac L. Harshbarger, University, Va.
Dr. Malcomb Hart Harris, Marion, Va.
Dr. India Hunt, Snowville, Va.
Dr. Roberts H. Harrington, Richmond, Va.
Dr. Ira T. Hornbarger, Hot Springs, Va.
Dr. R. H. Isaacs, Baltimore, Md.
Dr. Herbert C. Jones, Petersburg, Va.
Dr. Amos Ralph Koontz, Baltimore, Md.
Dr. Edmund John Kane, Richmond, Va.
Dr. Jury B. Loving, Culpeper, Va.
Dr. William J. Marquis, Richmond, Va.
Dr. Richmond L. Moore, Brookline, Mass.
Dr. Charles A. Muncaster, Cleveland, Ohio.
Dr. C. B. Morton, Alexandria, Va.
Dr. H. B. Mulholland, Washington, D. C.
Dr. Frank L. McNeer, Asheville, N. C.
Dr. W. J. Norfleet, University, Va.
Dr. Margaret Nolting, Richmond, Va.
Dr. Collins D. Nofsinger, Richmond, Va.
Dr. Samuel E. Oglesby, Philadelphia, Pa.
Dr. Wilkins J. Ozlin, Richmond, Va.
Dr. Patton K. Pierce, University, Va.
Dr. George W. Parson, Stony Creek, Va.
Dr. Louis J. Richman, Newport News, Va.
Dr. William M. Sheppe, University, Va.
Dr. Floyd R. Smith, University, Va.
Dr. Blanton Page Seward, Richmond, Va.
Dr. Charles P. M. Sheffy, Norfolk, Va.
Dr. Leroy Lee Sawyer, Norfolk, Va.
Dr. Lawrence O. Snead, Richmond, Va.
Dr. J. E. Taylor, Richmond, Va.
Dr. Allen Fiske Voshell, University, Va.
Dr. Arthur Jay White, Portsmouth, Va.
Dr. William H. C. White, University, Va.
Dr. Paul F. Whitaker, Richmond, Va.
Dr. James B. Woods, Jr., Richmond, Va.
Dr. Thomas M. Winn, Palmyra, Va.
Dr. Kon Wyatt, Fordwick, Va.
Dr. Silus Terry Yeatts, Floyd, Va.

The Nelson County Medical and Surgical Society

Met at Lovingston, Va., July 24th, and elected the following officers for the ensuing year: Dr. W. M. Tunstall, Lovingston, president; Dr. J. F. Thaxton, Tye River, secretary-treasurer (re-elected). Dr. H. G. Dickie, Massies Mill, was elected delegate to the Norfolk meeting of the Medical Society of Virginia, and Dr. D. C. Wills, Arrington, alternate.

The Secretary was instructed to write a letter to Dr. A. Micklem, of Rockfish, who is a patient at the University Hospital, in Char-

lottesville, expressing its sympathy and best wishes for his speedy decovery.

After voting to hold a special meeting at Shipman, Va., September 21st, the Society adjourned.

J. F. Thaxton, *Secretary.*

The Piedmont Medical Society

Held its regular meeting July 15, in Gordonsville, Va., at which time the following officers were elected: President, Dr. W. D. Macon, Charlottesville; vice-presidents, Drs. F. G. Scott, Jr., Orange, and W. C. Mason, Gordonsiville; secretary-treasurer, Dr. Lewis Holladay, Orange. This Society plans to enlarge its membership by taking in doctors from additional counties and will have two rather than four meetings annually, the winter meeting to be held at Charlottesville or University, the summer meeting to be held at various places in that section of the State. The plan of becoming a component society of the Medical Society of Viryina was taken under consideration and will be voted on at the next meeting in November. The Secretary of of the State Society, G. H. Winfrey attended this meeting and assisted in formulating this plan.

Secretary's Announcement

Local Authorities after Illegal Practitioners.

Commissioners of Revenue have held in several cities that it was not their function to pass on the qualifications of applicants for license to practice the healing art, that function being exclusively limited to the State Board of Medical Examiners and the proper law enforcement officers. Once the municipal authorities issued the license, the difficulty of securing the help of those same authorities in prosecuting those practicing without having complied with the State laws was increased.

Notwithstanding the opposition of the illegal practitioners and various cults the following is the substance of an ordinance passed by the City Council of Norfolk:

"Section 2. That it shall be the duty of the Commissioner of the Revenue before issuing any license to any person to practice as a physician or surgeon or to practice the art of healing bodily or mental infirmities, with or without physic or surgery, to require such person to present to said Commissioner a proper certificate issued by the State Board of Medical Examiners, showing that said applicant has duly qualfied before the said Board of Medical Examiners to practice in accordance with the provisions of Chapter 68 of the Code of Virginia.

"Section 3. That any person who shall practice as a physician, * * * within the City of Norfolk, without first obtaining the license hereinbefore provided for shall, upon conviction thereof, be subject to a fine of not more than $50.00; each day's practice to constitute a separate offense."

Properly qualified practitioners are indebted to the Norfolk County Medical Society for working out this very practical method for securing the support of the local authorities in enforcing the Medical Practice Act.

G. H. Winfrey, *Secretary-Treasurer.*

The Truth About Medicine

During June the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

Borcherdt Malt Extract Co.:
- Borcherdt's Malt Cod Liver Oil and Phosphorus.

Intra Products Co.:
- Ven Sterile Solution Procaine 0.5 per cent.
- Ven Sterile Solution Procaine 2.0 per cent.
- Ven Sterile Solution Procaine 5.0 per cent.

Lederle Antitoxin Laboratories:
- Pituitary Extract-Lederle (Obstetrical).
- Pituitary Extract-Lederle (Surgical).

Parke, Davis and Co.:
- Diphtheria Antitoxin piston syringe containers.
- Antitetanic Serum piston syringe containers.
- Antigonococcic Serum 12 Cc. bulbs.
- Antistreptococcic Serum 20 Cc. piston syringe container.
- Antistreptococcic Serum 50 Cc. piston syringe container.
- Anti-Anthrax Serum.
- Antimeningococcic Serum.
- Diphtheria Toxin-Antitoxin Mixture.
- Tuberculin B. (Bovine).
- Gonococcus Vaccine 5 Cc. bulb.
- Gonococcus Vaccine 1 Cc. syringe.
- Gonococcus Vaccine 5 Cc. bulb.
- Gonococcus Vaccine 20 Cc. bulb.
- Erysipelas and Prodigiosus Toxins (Coley) 1 Cc. bulb.
- Erysipelas and Prodigiosus Toxins (Coley) 15 Cc. bulb.

Book Announcements

Opiate Addiction. Its Handling and Treatment. By EDWARD HUNTINGTON WILLIAMS, M. D., Formerly Associate Professor of Pathology, State University of Iowa; Special Lecturer on Criminology and Mental Hygiene, State University of California etc. New York. The Macmillan Company. 1922. Cloth. 12 mo. 194 pages. Price, $1.75.

In his introduction, and speaking of the Harrison Narcotic Law, which was enacted on December 17, 1914, the author says it seems to be the consensus of opinion of Federal, State and County officials that, after five years of active legislation, the number of drug takers and the amount of drug consumed today is just as great as, if not considerably greater than, it was previous to the law's enaction. Wherefore, it appears that there must be something fundamentally wrong with the law itself, and, arguing what that may be, he says there is an anaolgy between our present attitude toward opium addiction and the lunacy situation of one hundred years ago. Insanity was not understood then, and, naturally the laws applying to it were inadequate and unjust. A drug addict is a malefactor in the eyes of the law whether he acquired his habit through pure viciousness or whether, as it often the case, his addiction was thrust upon him unwillingly. Slight modification in the existing laws tending to emphasize the medical side of the problem is suggested. Narcotic Clinics, conducted in 1920 in Los Angeles and San Diego, were based on this principle and produced encouraging results.

Dr. Williams, speaking of cures in cases of established drug addiction, says, if it be proper to speak of an individual being cured of "rhus" poisoning, we may properly refer to drug addiction as a curable condition, for there is a similarity between these two and other toxic conditions.

The temptation to quote salient points in the book is great, but one would hardly know where to begin or to stop. The subject is well-covered with a clarity of language and lack of redundancy that makes its reading a pleasure. Good, clean type, cream-tinted paper and handy size add much to this. There are but few errors, the most noteworthy being the substitution of the word "physic" for "phychic' on page 90. M. W. P.

Influenza. An Epidemiologic Study. By WARREN T. VAUGHAN, M. D. The American Journal of Hygiene. Baltimore, Md. Monograhpic Series No. 1. 1921. 260 pages. Price $3.25.

The author in this comprehensive study endeavors to correlate the epidemiological observations of the epidemic of thirty years ago with those of the 1918-20 epidemic and with the observations made during the intervening years. While admitting that as far as definite conclusions concerning the causative agent of the disease are concerned he says that we are no nearer to the truth than we were when Pfeiffer made his original observations.

The mass of information here compiled from original observation, and from many divergent sources, cannot but be of great value in the ultimate solution of the question of causation and prevention. At present, the prevention and eradication of influenza must depend chiefly, if not solely, on the general methods of preventive medicine. In giving the history of the disease, he shows that the epidemic of 412 B. C. described by Hippocrates and Livy, as well as that pervading the Athenian army in Sicily in 415 B. C., were probably influenza. The epidemic of 1889 is the one, however, with which the great one of 1918 can be most readily compared. Since 1173, the supposed first year of an authoritative influenza epidemic, to the present, Hirsch suposes that there have been about eighty, shown in a complete table.

This infectious disease leaves the body in the form of droplet sprays of saliva, through coughing, sneezing and talking.

He refers to Cumming's observation that in military camps infection is spread by insufficiently disinfected eating utensils. The disease does not spread any faster than the available speed of human communication. The remarkable variation in the period of incubation from twelve hours to two or three weeks is brought out.

The gradual increase in virulence was observed in 1918 as in previous epidemics. Vaughan says that "The pandemic of influenza in 1918 seems to have been more closely associated with the pneumonias than appears in any previous pandemic."

This fact was abundantly observed in the office of the Virginia Bureau of Vital Statistics . By far the greater part of the 15,000 deaths occurring in the state during the 1918 epidemic were complicated with either lobar or broncho-pneumonia, this being particularly true in the military camps.

The interesting point was noted by Lieut. D. Willis of Camp Lee that this disease was far more fatal amongst the raw recruits than the seasoned soldiers. Those who had been in the service less than one month constituted only 9.19 per cent of the total strength, yet

they furnished 30.11 per cent of the total deaths. Those who had been in the service less than three months constituted 46.63 per cent of the population, and furnished only 23.69 per cent of deaths. This is a splendid argument in favor of teaching the public the methods of "Keeping Fit," if we would reduce the death rate not only from influenza but from all infectious diseases, tuberculosis in particular.

A point is brought out which many general practitioners have observed; that the negro death-rate from lobar-pneumonia is high, being 28.31 per cent of cases as compared with the white rate of 10.77. In the section on immunity, the fact is developed that one attack renders very short immunity, if any. Some experiments in inoculation at various army camps are recorded which seem to offer hope that under such conditions at least, this practice may be developed into a useful one.

The book contains valuable sections on "Influenza and Other Diseases" and "Comparison of Influenza with other Epidemic Diseases." In the section on "The Prevention and Control of Influenza," the author outlines the accepted methods of prevention and handling epidemics, but, of course, can offer no one positive measure of prevention. After all, the most effective measure of prevention, as is discovered by a careful analysis of the data here accumulated, is in teaching the public the great value of improving the physical standard of individuals, by out-of-doors life and exercise, the avoidance of excesses and hurtful habits, and, above all, by the use of proper food, consisting of less meat, and the use of whole wheat bread, the green vegetables eaten raw and, more important than all else, the use of milk in abundance—one quart a day.

W. A. P.

Collected Papers of the Mayo Clinic, By WILLIAM J. MAYO, M. D., CHARLES H. MAYO, M. D., and associates in the Mayo Clinic and the Mayo Foundations for Medical Education and Research, Graduate School, University Minnesota. Edited by MRS. M. H. MELLISH. Volume XIII. 1921, Published May, 1922. Philadelphia and London. W. B. Saunders Company. 1922. Octavo 1317 pages, illustrated. Cloth. Price, $12.00.

So tremendous has been the recent advance of medicine that no one man can understand more than a small fraction of it; thus physicians have become more or less dependent on the skill, ability and special training of other physicians for sufficient knowledge to care for the patient intelligently. It is well for America that the medical profession has recognized the necessity for organized scientific effort which is taking the place of former competitive medicine that fostered self-sufficiency and jealousy.

A careful persual of this new 13th volume, "Collected Papers of The Mayo Clinic," will convince the most skeptical that in this institution "Group practice" has attained its most notable triumph. These papers are truly representative of the work being done by the Mayos and cover practically the entire domain of medicine and surgery from "The Use of Drugs in Infancy and Childhood" to the most complicated operations of surgery.

We are indebted to a country doctor of Southwest Virginia for a designation of the Mayo Clinic publication as the "Literary Digest of Medicine." The size is unfortunately large, and, since 29 of the papers bear a 1922 date, we are unable to understand why the publishers label it 1921.

H.

Female Weakness Cures. 68 pages. Illustrated. Price 15 cents.

Epilepsy Cures and Treatments. 38 pages. Illustrated. Price 15 cents.

Obesity Cures. 62 pages. Illustrated. Price 15 cents.

The Nostrum and the Public Health. 16 pages. Price 10 cents.

The first three pamphlets deal, as the name denotes, with specific products of the types described in the title. The fourth pamphlet does not deal with any specific nostrum, but discusses the general relation of the "patent medicine" evil to the public health. The pamphlet also contains an article on "Truth in Advertising Drug Products" and three short items on certain phases of the nostrum business.

Applied Chemistry. An Elementary Text Book for Secondary Schools. By FRED N. PETERS, Ph. D., Instructor in Chemistry in Central High School, Kansas City, Mo., for 23 years; Author of "Chemistry for Nurses," etc. St. Louis. C. V. Mosby Company. 8 vo. 461 pages. Illustrated Cloth. Price, $3.50.

The Johns Hopkins Hospital Reports. Volume XXI, Fasciculus III. Baltimore. The Johns Hopkins Press. 1922. Paper, 230 pages.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 AUGUST, 1922 No. 5

Editorial

The Finer Adjustments of the Diet in Severe Diabetes.

The management, dietetically, of mild cases of diabetes has been, in late years, rather satisfactory. The so-called "Allen treatment" and the studies conducted in connection with the adoption of this plan of diabetic management have done much in the milder types of the disease. Patients, who have followed this course of treatment, have been greatly benefited by the instructions given and the knowledge acquired about food. They have learned of gross food values; they have learned of the five per cent, of the ten per cent, the fifteen per cent, and the twenty per cent vegetables; they have learned of the carbohydrate gram values in thirty grams of bread; they have learned to weigh their food, to calculate the calories; to allocate the grams of carbohydrate, protein and fat so as to remain sugar free and so as to obtain sufficient total caloric values in these three elements for body maintenance. Likewise, they have learned of protein values; of the total usual gram allowance per day; and they have learned caloric value of the fats and the addition of this element to the low carbohydrate allowance. And, as before stated, this knowledge and practice has done much to improve and make tolerable the condition of the mild diabetic and many of them have crippled-carbohydrate-mechanisms gradually improving under the restricted use of this method.

But, in the midst of apparent successes in managing the mild cases, there were a considerable number, which may be classified as severe types, that failed to improve and disappointing symptoms appeared. So the management of severe cases of diabetes by the usual routine procedure in vogue in these later days has been unsatisfactory. In searching about for possibilities of improving the chances of this type of cases, investigations within the last two years have brought forward procedures and methods in rationing of a rather greater refinement than heretofore followed.

It was found that in reducing the carbohydrates of these cases to nil and in endeavoring to maintain strength and bodily weight by the addition of proteins and fats alone, severe and grave signs and symptoms of ketosis and coma threatened and often terminated fatally wtih great suddenness. This suggested investigations for the more careful balancing of the diet of the diabetic of the severe grade. It was thought, as these ketone bodies were derived from the fats that were imprefectly metabolized, and as it was found that fats are burned in the "flame of the carbohydrates," it was quite apparent, it seemed, that it was necessary to determine the minimum requirement of carbohydrate that was necessary to furnish the "flame" for complete fat metabolism, as the fats must necessarily form so predominant a proportion of the food allowed. As a result, the *high fat and low protein and low carbohydrate* balance was suggested. This high fat diet, with its balanced minimum carbohydrate "pacer" or "flame," and adjusted protein "stabilizer," has brought forward strong advocates; Newburgh and Marsh.

In addition to this newer adjustment of the fat-carbohydrate items came along the discovery that the protein played a very important role and should not be overlooked in this finer adjustment. For it was found that protein, in the absence of proper caloric food supply, or in fasting, or in insufficient carbohydrate supply for perfect fat metabolism, etc., became a source of available sugar (58 per cent): that if an excess of protein, over the actual needs of the katabolism of structural protein, was given, this excess, in some phases of the disease, became a source of

sugar; that, if too little carbohydrate was given, the body called upon the body protein for sugar and that this produced an increase of metabolism rate. So, it was determined that it was necessary to maintain a nitrogen balance in order to secure a fat-carbohydrate metabolism free of ketosis. It has been suggested by workers in this field that a nitrogen balance may be maintained by serving the patient with two-thirds of a gram to a gram of protein for every kilogram of body weight. With this estimation as a fixed point, the search for the ketogen and antiketogen balance must be made. So workers have arranged tables by which this may be done and done in relation to the metabolic rate. These tables are seen in the current literature and, it is hoped, serve as a means of improving the chances of patients having the severer grade of diabetes.

To this apparent advance in feeding the diabetic comes the cheering news that there is soon to be placed before the profession a pancreatic extract or substance, which may serve to restore suppressed pancreatic internal secretion or, at least, when injected into the blood of the diabetic, afford a greater degree of carbohydrate tolerance and assist in performing the all too baffling function of the pancreatic internal secretion which appears to play so important a part in carbohydrate metabolism.

Sub-Acute Bacterial Endocarditis.*

Murray states that the sub-acute group of bacterial endocarditis results from a blood infection which originates from some "quiet inflammation" such as pyorrhea or chronic tonsillitis; that its metastases do not form pus; that its duration may be from a few weeks to four years. He notes Schottmuller's (1910) description of five cases as due to a green producing streptococcus (endocarditis lenta): he calls attention to Libman's outstanding observations (1912) showing most of the organisms green producing in blood agar plates, while some were not of this nature; ninety-five per cent being streptococcus viridans, and five per cent influenza. In Murray's group streptococcus viridans were found in eighty per cent and streptococcus hemolyticus in the remainder, except two which were staphs.

The order of events in the pathogenesis of the condition may be as follows: from some latent or chronic focus of infection, bacteria migrate to the blood stream, eventually selecting the endothelial structures of the aortic or mitral valve as a secondary habitation. At this site, the formation of fine grayish masses is associated with more or less destruction and necrosis of cellular structure and deeper layers of the valves. To this pathological formation of valvular structure are added bacteria, blood cells, fibrin and vegetative formations. These encrustations or excrescents, of mixed pathology, become more and more friable and breakable, eventually are possible emboli, or form obstructive or regurgitant effects at the valvular orifices.

The persistent rises of temperature, which may not go over 100° to 101°F; the evidence of some valvulitis, as shown by murmurs and thrills, cardiac irregularities; the focal infection in mouth or throat; the clubbed fingers; a muddy color; are some of the suggestive signs and symptoms that may naturally direct attention to this form of endocarditis. A word of warning concerning this rather illusive heart condition is always in order, because of its very unobtrusive symptom-complex. The heart muscle in the early stages seems to be proof against the infection, but later evidences of muscle infection and failure are seen by the dilatation and muscle degeneration. Embolism is a most dramatic and spectacular symptom. Emboli may set out without warning and instantly transform the entire clinical aspect of the case, throwing forward brain, kidney, skin, spleen, blood vessel symptoms, to overshadow the faint murmur and the low temperature and the other apparently innocent cardiac symptoms.

Murray calls attention to the disease under the following items:—

1. An insidious onset.
2. A persistent and monotonous fever.
3. Evidence of valvulitis (aortic or mitral).
4. Enlargement of the spleen.
5. Gross embolic phenomena.
6. Minute embolic phenomena (petechial hemorrhage, etc.)
7. Nephritis of a peculair type.
8. The result of the blood culture.

He showed the following points in a speciment presented for observation:—

1. The massive and friable nature of the vegetations.
2. The method by which the inflammation progresses to the compensation valve.

(a.) By a flapping of the mitral cusp against the aortic vegetation.

(b.) By continuity of surface along the aortic cusp of the mitral.

3. Specimen of a mycotic aneurysm.

4. Peculiar nephritis (flea-bite kidney).

5. The aneurysmal ballooning sometimes occurring in the mitral valve.

6. The specimen of a patent ductus arteriosus with vegetations in the ductus, pulmonary artery and valves, as well as the right ventricle. Also note that in this case there is a myocitic aneurysm on one of the branches of the pulmonary artery.

.7 The large spleen with specimens of infarction in spleen and kidneys.

*Murray, L. N. University of Toronto. Annals of Clinical Medicine. Vol. 1. No. 1.

Abstracts.

Our readers are asked to read the abstracts found in the *Department of Analyses, Selections, etc.*, in this issue. The journal feels that it is to be congratulated upon receiving this response to its call for abstracts. We have felt for a long time that there should be a department which would furnish our readers with selections in abstract from publications of interest. The propagation of the facts and knowledge of medicine can only be attained in any measure by wide distribution of the newer lines of thought that are being given out in the medical literature of the day. And it was with the hope of doing something towards becoming a medium for the further distribution of medical articles of value that we have asked some of our fellow members to send this journal abstracts for publication.

We wish to take this opportunity to thank those who have responded and to express the hope that our readers will find these abstracts useful and beneficial.

News Notes

The Norfolk Convention.

October, 31-November 3, 1922.

With amazing rapidity the days are fleeting, so that almost before we can realize it the Annual Convention will be upon us. Already the doctors of Norfolk are preparing for that event; which they earnestly hope will be memorable.

The Norfolk County Medical Society, comprising some 175 members of the profession in the Twin Cities and close environment, is taking charge of the arrangements with the veteran entertainer of surpassing skill, Dr. R. Lloyd Williams, directing proceedings in close association with the State President, Dr. E. S. C. Taliaferro, who is as able and amiable as he is big.

To those members of the Medical Society of Virginia who in other years have honored their Norfolk brethren by their attendance, no further assurance will be needed that a thoroughly good time is in prospect.

In due season the scientific program will be announced, when it will be found that abundant provision is being made for the professional and intellectual edification of the members; and the Norfolk physicians hope to at least maintain their reputation for social entertainment; so that visitors may expect a hearty welcome, a profitable time of intercourse with their professional associates, and a season of enjoyable relaxation and social refreshment. Won't YOU come?

Special provision will be made for the entertainment of the ladies, who are most cordially invited. Norfolk offers the attractive advantage of good stores for shopping, many places of amusement and interest, and the Convention program will include features specially devised for the lady visitors.

As usual, there will be much of interest in the large and varied exhibits of the many manufacturers of physicians' supplies who are arranging for this favorable opportunity of bringing their wares to the attention of attending members.

Inquiries as to hotel reservations and all other matters of interest, including space for exhibits, should be addressed to the Chairman of the arrangements committee, Dr. R. Lloyd Williams, 405 Taylor Building, Norfolk.

Don't forget the date, October 31st-November 3rd, and make your plans in good time to be present.

LOCKBURN B. SCOTT,
Secy., Norfolk Co. Med. Society.

New Hookworm Treatment Successful in Big Tests.

Evidence that is gradually being accumu-

lated by medical men in various parts of the world provides a good basis for the belief that carbon tetrachloride, a cheap and common chemical, commonly used as a clothes cleaner, is a cure for hookworm in human beings. Recent reports from the Fiji Islands and Ceylon, covering thousands of cases, show practically 100 per cent of successes. To Dr. Maurice C. Hall, of the U. S. Department of Agriculture, is due credit for the discovery of the efficacy of the drug in removing these parasites.

In the prison at Kandy, Ceylon, a country where hookworm is common, this carbon compound was tried on a number of persons, among them a condemned criminal, who offered himself as a subject for a thorough test. He was given a maximum dose of 10 cubic centimeters of the drug, which removed 55 hookworms. Twenty-two days later he was executed. A post-mortem examination showed that all these parasites had been removed. The other convicts apparently were completely freed of the parasites by much smaller doses. No effects other than slight dizziness and a sensation of weight in the stomach were noticed in the case of those receiving less than 10 cubic centimeters of the drug. The prisoner receiving 10 cubic centimeters experienced some nausea and drowsiness.

Another report states that 12,000 natives of the Fiji Islands have been successfully treated by the same method, a single dose removing all these parasites from 90 per cent of the patients and at least 98 per cent of them from all persons treated. The almost universal success thus far gives reason to believe that carbon tetrachloride is far superior to the old remedies, thymol and oil of chenopodium, both of which have caused fatalities. Thus far, carbon tetrachloride, usually given in capsules, has produced no ill effects and does not appear seriously to inconvenience the patient. So, it seems more and more probable it will prove to be a cheap, agreeable, and effective treatment for a parasite that is destroying health and reducing human efficiency in millions of people in many parts of the world, including many thousands in our Southern States.

Activity Against Cancer.

The District of Columbia Medical Society, at a meeting July 1, appointed a cancer committee to act with the local committee of the American Society for the Control of Cancer, which is to conduct an educational campaign in Washington, beginning this summer and ending with Cancer Week in November. This committee is composed of Drs. Edwin A. Merritt, A. L. Stavely, Thos. A. Groover, Edward M. Parker, and William C. Fowler, Health Officer. Dr. Harry H. Kerr is chairman and Dr. James F. Mitchell honorary chairman of the Washington Committee of the American Society for the Control of Cancer.

Great interest is being manifested in the control of cancer and the American College of Surgeons has held various sectional clinical congresses throughout the country during the past eighteen months, in which cancer was featured. In 1920, eight such meetings were held, in 1921, there were eighteen and, to July, there had been six this year.

The Public Health Institutes.

Indicative of the interest displayed at all times in public health matters, sixteen public health institutes were held in various cities of the country during the winter and spring of 1922, under the auspices of State Boards of Health and the U. S. Public Health Service. There was an attendance of 6,254, or an average of nearly 400 for each institute. This does not include the total number attending, however, as many failed to register. Classification of those registeing showed a larger number of nurses, physicians in attendance taking the second place. Many of the physicians registered were undoubtedly local health officers.

According to *Public Health Reports*, "The success of this series of institutes has indicated possibilities which, it is hoped, will be even more fully realized in the future."

Dr. Charles E. de M. Sajous,

Of Philadelphia, has been awarded the 1922 American Medicine Gold Medal for his noteworthy contributions to the study of the glands of internal secretion.

The Atlanta Graduate School of Physicians and Surgeons

Will formally open in the Fall. The general offices are located in Grady Hospital and, in addition to the city hospital, practically every private hospital in Atlanta will be associated with the graduate school. Dr. William Perrin Nicolson is dean of the school and

Dr. Michael Hoke will be president of the faculty.

Dr. J. Thomson Booth

And family, Ashland, Va., have returned home from a visit to the home of friends on Chesapeake Bay.

Dr. William F. Grigg,

Richmond, has been appointed by Governor Trinkle a member of the Board of Directors of the Virginia Industrial School for Boys, for a term of six years, beginning June, 10 1922.

Board on Criminal Mental Hygiene.

Governor Trinkle recently made the following appointments on the Board on Criminal Mental Hygiene:—Dr. William F. Drewry, Petersburg; Dr. R. Finley Gayle and Dr. James K. Hall, Richmond; and Mr. H. D. Coghill, Richmond.

Dr. G. Canby Robinson,

Recently of Johns Hopkins University, but who has been named professor of medicine at Vanderbilt University, Medical Department, Nashville, Tenn., is spending the summer in study at the University of Copenhagen, before assuming the duties of his new appointment.

N. C. District Meeting.

At the last meeting of the Sixth Councilor District Medical Society of North Carolina, held in Durham, the following officers were elected: President, Dr. H. Hartwell Bass, Henderson; vice-president, Dr. Eric A. Abernethy, Chapel Hill; secretary-treasurer, Dr. Burton W. Fassett, Durham, re-elected.

A Crime Against the Race.

Although eighty per cent of the babies in the United States are born with a chance to be healthy, statistics show that only seventeen per cent grow up with normal bodies! One million children in the United States today have tuberculosis; one million have defective hearing; five million have defecteive eyesight; and six million are suffering from malnutrition due, chiefly, to ignorance or neglect on the part of the mothers!

Because of these shocking conditions the Delineator has persuaded Dr. L. Emmett Holt, Dr. Ralph Lobenstine, Dr. Henry L. K. Shaw, Dr. William Parker Lucus, Dr. Thomas W. Salmon, and Dr. Owen R. Lovejoy to give to the average mother the benefit of their scientific knowledge. These well-known specialists are writing a series of articles that will appear in the Delineator every month for at least a year.

Excess of Male Births in Germany.

According to the *Journal of the A. M. A.*, in the period from 1915-1920, records show that the excess of boy babies has been greatly increased, this varying from 6.2 to 9.2 in Prussia, Saxony and Bavaria.

The American Psychiatric Association,

At its recent meeting in Quebec, elected Dr. Harry W. Mitchell, Warren, Pa., president, and Dr. Clarence F. Haviland, Albany, secretary-treasurer.

Dr. S. S. Northington,

South Hill, Va., has returned home after a visit to Virginia Beach and Ocean Park.

Dr. Sidney Trattner

Has returned to his home in Richmond, after a visit to relatives in New York.

Members S. C. State Board of Examiners.

Dr. J. Baxter Haynes, Spartanburg, and Dr. J. S. Matthews, Denmark, have been appointed members of the South Carolina State Board of Medical Examiners.

Dr. E. C. Levy,

Director of Public Welfare of Richmond, has accepted an invitation to deliver an address on public health as one of the 1922-1923 De Lamar lectures of Johns Hopkins University.

Public Health School at Columbia University.

Under a bequest of the late Joseph De Lamar, an institute of public health has been established at Columbia University, New York. Dr. Haven Emerson has been appointed professor of public health and administration. While the school will be primarily for research and the training of research workers, it will also afford instruction to students of medicine and others.

Dr. Frederick C. Warnshuis,

Ann Arbor, Mich., speaker of the House of Delegates of the American Medical Association, received the honorary degree of Doctor

of Science at the recent commencement of Hope College, Holland, for work in surgery, public health conservation and medical organization.

Virginia Students Pass N. C. Board.

Of the 37 men who recently passed examinations before the North Carolina Medical Examining Board, to practice in that State, two were graduates of the Medical College of Virginia:—Dr. C. F. Ridge, Edgar, N. C., and Dr. Paul F. Whitaker, Kinston, N. C.

Dr. Thomas J. Tuder

Announces that after a short time spent at Exeter, Va., he returned to Keokee, Va., the first of August.

Dr. H. Clay Carson

Has moved from Andover, Va., to Exeter, Va.

Reappointments on State Board of Health.

Commissions have been issued by Governor Trinkle for the reappointment of the following members of the State Board of Health:—First District, John W. Daniel, Cape Charles; Fourth District, Dr. Wm. F. Drewry, Petersburg; Eighth District, Dr. William M. Smith, Alexandria.

Dr. H. M. DeJarnette,

Fredericksburg, Va., has been appointed by the Governor as one of the members from the State-at-large of the Virginia Normal School Board. He has served on the Board for the past four years.

New Hospital Opened.

Two completed units of the new Marshall Lodge Memorial Hospital in Lynchburg, Va., which is being built by the Marshall Lodge of Masons, were formally opened on the first of July. The third and fourth units are to be built at once.

Dr. L. E. Fuller,

Axton, Va., has been elected a member of the board of directors of the Bank of Axton, recently organized in that place.

Dr. H. Lee Wyatt,

Petersburg, Va., has recovered from a recent operation for appendicitis, and resumed his practice.

Dr. R. L. Hundall,

Beverlyville, Va., has been elected president of the Northumberland County Farm Bureau, which has been organized with 106 members. This Bureau is an auxiliary of the Virginia Farm Bureau Federation and the American Farm Bureau Federation.

Dr. and Mrs. O. F. Blankingship,

Of this city, have moved into their new home at 2605 Barton Avenue.

Dr. George R. Maloney,

Of the class of 1921, Medical College of Virginia, after a year's internship at Stuart Circle Hospital, this city, has been appointed Medical Inspector in the Health Bureau of the Department of Public Welfare of Richmond.

Dr. and Mrs. S. E. Massey

Have returned to their home in Martinsville, Va., after a visit to their former home in Bramwell, W. Va.

Dr. W. W. Chaffin

Has been elected vice-president of the Rotary Club, of Pulaski, Va.

Changes in Medical Faculty, Georgetown University.

The following changes have been announced in the medical faculty of Georgetown University, Washington: Major Jos. P. Madigan, recently of U. S. Army, has been appointed to the chair of anatomy; Drs. Thos. E. Neill and Murray Russell as associate clinical professors of surgery; and Dr. Harry A. Ong as associate clinical professor of medicine.

College Issue of Virginia Pharmacist.

The Virginia Pharmacist, under the editorship of A. L. I. Winne and Wortley F. Rudd, has made its July number a "college issue," and has devoted much of its space to a consideration of ways and means for making the School of Pharmacy of the Medical College of Virginia more serviceable to the State. It is the aim of *The Virginia Pharmacist* to improve pharmacy in Virginia with the idea of rendering the people better service from year to year.

Dr. W. Wallace Gill,

Of ths city, has moved his offices into the

new building of the Methodist Publishing Company, at Fifth and Grace Streets.

Dr. Harvey Cushing,

President-elect of the Clinical Congress of the American College of Surgeons, has returned from England where he acted as director of the surgical unit of St. Bartholomew's Hospital, London, for two weeks. This was in accordance with a plan which has been in operation for the past few years, calling for exchange visits of foreign surgeons with the Peter Bent Brigham Hospital, Boston, the visiting surgeon to be surgeon-in-chief temporarily in place of Dr. Cushing, for some period in each year.

Dr. R. W. Garnett

Has been re-elected city health officer of Danville, Va.

The Southwestern Virginia Medical Society

Is to hold its semi-annual meeting in Wytheville, September 13 and 15, under the presidency of Dr. A. B. Greiner, of Rural Retreat. Dr. E. G. Gill, of Roanoke, is secretary-treasurer of this organization. The annual election of officers will be held at this meeting.

Price of Book Reduced.

Dr. Albrecht Jensen, Box 73, General Post Office, New York City, announces that the price on his book entitled "Massage and Exercises Combined, A Permanent Physical Lecture Course for Men, Women and Children," has been reduced to $2.50. This book was noticed in our journal in February, 1921. Dr. Jensen also advises that he has made a film of all the exercises in his book.

The American Medical Association of Vienna

Announces the restoration of friendly understanding between their organization and the teaching body of the University of Vienna. A special committee, elected by the Association, after a thorough investigation of the charges of discrimination against Americans, find that the men who made the accusations of discrimination were either unable or unwilling to substantiate these charges under oath, and it is the sentiment of the Association that the men of the teaching body of the University of Vienna have suffered by this unjust criticism.

"A Fair Chance for Your Baby and You."

The Maternity Center Association, 370 Seventh Avenue, New York City, has issued 12 pamphlets in envelope as twelve talks to mothers and fathers. They are intended to point the way to "better babies" and show what mothers should do to keep healthy and happy during pregnancy, at child-birth, and after the baby is born.

Our Norfolk Meeting.

The Norfolk County Medical Society, through its secretary, Dr. Lockburn Scott, has in this issue invited the members of the State Society to attend the meeeting in that city, October 31 to November 2, inclusive. The invitations to Norfolk always carry such an air of hospitality that it is hard to see how any one can resist attendance upon meetings there. It is your Society and you can add to the interest and enthusiasm of the meeting by lending your presence. Dr. R. Lloyd Williams, 405 Taylor Building, is chairman of the committee of arrangements.

The President, Dr. E. C. S. Taliaferro, has invited men of prominence to read papers and an attractive symposium will be presented by members. How about contributing a paper for this meeting? We would be glad to have your title now; some have already been received.

Another matter which should receive attention without delay is the selection of delegates to represent component societies at this meeting. A few societies have already done this. As soon as appointed please send names of your delegates to the Secretary of the Medical Society of Virginia at 104½ West Grace St., Richmond.

Chirocractors in the Philippines.

We note from *The Journal of Philippine Island Medical Association* that "the members of the local medical fraternity were fairly taken by surprise by the rather sudden and simultaneous appearance in Manila, and apparently in the provinces, of chiropractors who were thought to be safely confined to some States of the Union. As usual the latter have fairly stung the public with their bizarre announcements and claims, buying full-page advertisement space in some of the local dailies. They have gone to the extreme of attempting to have a bill submitted to the Legislature

regulating the practice of chiropractic and creating a chiropractic examining board for the Philippines."

Dr. R. S. Spilman,

Medical officer of the Virginia Military Institute, Lexington, is visiting relatives near Warrenton, Va.

The Association of Surgeons of the Southern Railway

Held its twenty-sixth annual meeting in Chattanooga, Tenn., June 20, 21 and 22, under the presidency of Dr. F. D. Walker, of Cochran, Ga. The three prizes offered by the *International Journal of Surgery* for the best papers read were presented by the committee of awards to Drs. F. M. Inge, Mobile, Ala., E. T. Newell, Chattanooga, and Muir Bradburn, New Orleans.

Charleston, S. C., was selected for the next place of meeting and the following officers were elected:—President, Dr. W. M. Cunningham, Corona, Ala.; vice-presidents, Drs. E. T. Newell, Chattanooga; W. W. McKenzie, Concord, N. C.; historian, Dr. George Ross, Richmond; secretary-treasurer, Miss Edith A. Foltz, Washington, D. C.; new member of the executive council, Dr. J. H. Mitchell, Mt. Vernon, Ill.

Dr. Frazier Succeeds Dr. Deaver.

Dr. Charles H. Frazier, formerly professor of clinical surgery in the University of Pennsylvania, has been made John Rhea Barton professor of surgery in that institution, succeeding Dr. John B. Deaver, resigned.

Dr. W. Macon Smiley,

Salem, Va., was a recent visitor at his former home in Halifax County, Va.

Dr. O. C. Page,

Formerly of Brodnax, Va., has moved to Cary, N. C.

Dr. G. B. Setzler,

Who, since his graduation, has been located at University, Va., has now moved to Norton, Va.

Dr. and Mrs. Tom A. Williams,

Middletown, Va., are receiving congratulations on the birth of a daughter, Margaret Louise, on May 29. They have recently returned home after a visit to Mrs. William's parents in Charlestown, W. Va.

Dr. R. W. Stoneburner,

Of Toms Brook, Va., has moved to Montgomery, W. Va., where he will be associated with the Coal Valley Hospital, of that place.

Dr. Charles W. Putney,

Who spent a short time with relatives in this city, on his return from Grace Hospital, New Haven, Conn., has accepted a position in Norfolk, Va., as a medical examiner with the Relief and Pension Department of the Norfolk and Western Railway Company.

Dr. Micajah Boland,

Formerly of the Naval Training Station, Hampton Roads, Virginia, has been appointed Medical Director of the Gendarmerie d'Haiti, with rank of Colonel, with headquarters in Port au Prince, Haiti.

Doctors on Vacation.

Dr. Thos. E. Hughes, of Richmond, and Dr. E. G. Gill, of Roanoke, spent their vacation at The Homestead, Hot Springs, Va.

Dr. and Mrs. H. S. MacLean

And family, of this city, are spending several weeks in the Canadian Rockies and Yellowstone Park.

Dr. Alvah Ramsey,

Who has made his home in Norfolk, Va., for sometime, has moved to Williamson, W. Va., where he will be a medical examiner with the Norfolk and Western Railway.

Dr. W. T. Wimbish,

Formerly of this State, who has recently been located at Benbush, W. Va., announces that his postoffice is now Coketon, W. Va.

Adenoid and Tonsil Clinics in North Carolina.

Beginning August 1, the North Carolina Health Department held a clinic at Yanceyville, N. C., for the removal of adenoids and tonsils from children in need of such treatment. It was reported that 500 children of Caswell County needed treatment. These clinics are conducted on the same plan as those of like nature in Virginia. Dr. John B. Wright, of Raleigh, was the operating surgeon and was assisted by local physicians, trained nurses and representatives from the State Health Department.

Dr. William A. Harris,

Spotsylvania, Va., has been chosen one of the school trustees for Spotsylvania County.

Dr. and Mrs. J. Allison Hodges,

Richmond, are now at their summer home, "Drowsy-Waters Cottage," at Montreat, N. C. They will return to this city about September 1.

Dr. and Mrs. J. M. Shackelford

Have returned to their home in Martinsville, Va., after a visit to Baltimore.

Dr. William S. Cline,

Woodstock, Va., is now regaining the use of his arm, after fracturing his shoulder in a fall several weeks ago.

Dr. W. O. McCabe,

Thaxton, Va., was elected president of the Bedford County Fair Association.

Nurses Given Police Power.

An amendment was recently made to the city ordinances, to extend police powers to certain employees of the Health Department of Richmond, so as to include nurses connected with the Bureau of Health. In accordance with this ruling, twelve nurses and the chief nurse of the Health Bureau were recently sworn in with police powers.

New Dean of Medical Department, M. C. Va.

At a meeting of the Board of Directors of the Medical College of Virginia, held the latter part of June, Dr. Manfred Call, Richmond, was elected dean of the school of medicine.

Government Positions Open.

The U. S. Civil Service Commission, Washington, D. C., announces an urgent need for eligibles to fill positions of junior medical officer in the Indian Service and the Coast and Geodetic Survey. Applications will be received and rated until further notice.

Applications will also be received and rated until December 30, 1922, for graduate nurse and graduate nurse (follow-up), for filling vacancies in the U. S. Veterans Bureau and in the Indian and Public Health Services.

Full information concerning salaries, etc., and application blanks may be secured from the above named Commission.

Obituary

Dr. William Pickering Norris,

A prominent physician of Salem, Va., where he had resided since 1899, died suddenly at his home, at 1 A. M., July 23rd, after an illness of several weeks with heart disease. Dr. Norris, the son of Maj, and Mrs. Joseph E. Norris, was born in Madison County, Va. He attended the Medical Department of the University of Virginia and the University of Louisville, Kentucky, graduating with honors from the latter, in 1892. He was a member of the M. E. Church, South, of Salem, Va., and also of its Board of Stewards He was a member of the Roanoke Academy of Medicine, and also of the Medical Society of Virginia. He was an ardent Mason, being a Past Master of Taylor Lodge, No. 23. A. F. & A. M., Salem, Va., and was also a member of Kazim Temple, Ancient and Accepted Order Nobles of the Mystic Shrine. He had been Health Officer of Salem and Coroner of Roanoke County for several years.

Dr. Norris had a very large practice, especially so in the country surrounding Salem, and was ever ready to respond to the call of duty, never thinking of himself, and always willing to make any sacrifice, in order to meet the demands of the sick and suffering. This noble, unselfish trait, of never sparing himself, was a large factor, if, indeed, not the only one, in the causation of his fatal malady, an organic heart disease. His friends in Salem, Roanoke County and elsewhere, were legion. He was greatly beloved and will be sadly missed and his place most difficult to fill.

His wife, who was Miss Margaret Osborne Templeton, daughter of Wm. F. and Edna V. Templeton, of Fairfield, Va., two children William Templeton and Margaret Magruder, and a brother, Joseph Norris, of Woodstock, survive him.

R. M. W.

Dr. Philip Taylor,

A well known physician of Richmond, died at his home, August 1. He was born in New York City, in April, 1850, and spent his early life there and on Long Island. His preparatory education was in New England schools,

after which he studied medicine at Columbia University, College of Physicians and Surgeons, New York, from which he graduated in 1876. After serving an internship of a year at Kings County Hospital, he went to England and France, where he studied for two years in his specialty—eye, ear, nose and throat diseases.

Dr. Taylor moved to Richmond in 1882 and was actively engaged in practice until about eleven years ago when he retired owing to failing health. He was a member of the Medical Society of Virginia and several other local organizations. He is survived by his wife and one daughter.

Dr. Bertram Hensel Gilmer,

A prominent physician of Cape Charles, Va., and superintendent of the Cape Charles Baptist Sunday School, died in Richmond July 21, after an illness of about eight months from paralysis. He was born in Rockingham County, Va., forty-eight years ago, and received his medical education at the University College of Medicine, Richmond, from which he graduated in 1903. He was buried at Cape Charles with Masonic honors. Dr. Gilmer is survived by his wife, a son and several brothers and sisters.

Resolutions on the Death of Dr. Gilmer.

WHEREAS, The Northampton County Medical Society has heard with sincere regret of the death of Dr. B. H. Gilmer, of Cape Charles, on July 21, 1922, and

WHEREAS, Dr. Gilmer, in the history of his career, has been an ornament to the profession, a self-sacrificing and devoted minister in the relief of human suffering; therefore,

BE IT RESOLVED, That this Society desires to place on record its sense of loss to the profession and humanity, in the death of Dr. Gilmer, and

RESOLVED, That this preamble and these resolutions be placed on record, that a copy be sent to his family, and that they be published in the Cape Charles newspapers and the *Virginia Medical Monthly*.

Signed:

C. L. NOTTINGHAM,
J. M. LYNCH.

Dr. Edward Ashby Waugh,

One of the leading physicians of Lynchburg, Va., died suddenly July 8, death being due to angina pectoris. Dr. Waugh was seventy years of age and received his medical education at the University of Virginia, from which he graduated in 1885. He had been a member of the Medical Society of Virginia since 1901. Dr. Waugh was unmarried.

Resolutions on the Death of Hugh McGuire Taylor, M. D.

Dr. Hugh McGuire Taylor, aged 66 years, died at his home, "Whitcombe," near Richmond, at 9 o'clock, on the morning of May 30, 1922, after an illness of some months.

A native of Clarke County, Va., Dr. Taylor received his early education from local schools, Academy at Berryville, and the Virginia Military Institute; at the latter institution he spent two years. His medical education was obtained at the Medical College of Virginia, graduating in 1876. From that time until within a few years of his death he was actively engaged in the practice of his profession in Richmond and in the vocation of teaching in medical schools of this city. Dr. Taylor soon secured a large and lucrative practice. By his indomitable energy and indefatigable purpose he attained an eminence as a surgeon which was widely recognized and appreciated. He was extremely painstaking, careful and accurate in his surgical work.

In the Medical College of Virginia and in the University College of Medicine, and later in the combined schools as Professor of Surgery, he was recognized as an excellent, earnest and accurate teacher. He filled every teaching position with credit and honor.

Dr. Taylor was appointed a member of the State Medical Examining Board at its organization. He was one time a member of the State Board of Health, President of the Richmond Academy of Medicine and Surgery, President of the Medical Society of Virginia, Vice-President of the International Association of Railroad Surgeons, a member of the Southern Surgical and Gynecological Society and the American Medical Association. Dr. Taylor was a member of the Richmond Chamber of Commerce and the Westmoreland Club. He was a vestryman in All Saint's Episcopal Church.

Dr. Hugh Taylor was a prominent and successful surgeon in Richmond, honored by his professional brethren, esteemed by his wide clientele and beloved by his large circle of friends. His high character, his kindly and genial nature, and his skill as a surgeon won for him a high place in the community and brought to him a successful career.

THEREFORE, as it has pleased an All-Wise Providence to terminate Dr. Taylor's useful life,

BE IT RESOLVED by the Medical Faculty of the Medical College of Virginia:

FIRST. That we, his colleagues, honor his memory because of the high and distinguished characteristics which signalized his life both as a man and as a doctor.

SECOND. That we revere his memory and accord him a position of prominence in the roll of distinguished surgeons who have served this city and state.

THIRD. That we express our sympathy to his bereaved widow, and request that the secretary transmit these resolutions to her, and also spread these resolutions on the minutes and publish them in the VIRGINIA MEDICAL MONTHLY, the official organ of the Medical Society of Virginia.

VIRGINIUS HARRISON,
BEVERLEY R. TUCKER,
ALEXANDER G. BROWN, JR.,
Committee.

Fifty-third Annual Session, Norfolk, Va., Oct. 31-Nov. 3, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 6.
WHOLE No. 843

RICHMOND, VA., SEPTEMBER, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

THE CORRECTION OF FACIAL DEFECTS WITH SPECIAL REFERENCE TO NUTRITION OF THE SKIN FLAPS AND PLANNING OF THE REPAIR.*

By C. C. COLEMAN, M. D., F. A. C. S., Richmond, Virginia.

Transplantation of pedicled skin flaps is often required to make good the tissue loss of acquired facial deformities. Some impairment of the blood supply of the transplanted skin flap is inevitable but, unless the interference with the circulation of the tissue fluids through the pedicle can be kept within reasonable limits, the transplant may die from gangrene.

The loss of a skin flap is a serious matter, followed as it generally is by infection, loss of time, increase of deformity and sometimes by the exhaustion of all of the tissue available for repair. The cosmetic results of transplantation of skin where the flap has barely survived after a desperate struggle for nutrition are generaly impaired by fibrosis and changes in pigment. These effects of severe local anemia permanently alter the appearance of the flap and detract from the success of the operation. It is of the utmost importance, therefore, that the nutrition of the flap during the early period of attachment to its new bed be kept at the highest possible level, both to lessen the dangers of gangrene and to preserve the normal appearance of the transplanted skin.

CASE I. (A)—Deformity from old burn of right side of face. The right eyebrow is destroyed and there is an ectropion of both lids, with annoying irritation of the eye from constant exposure. The right side of the upper lip is everted and pulled upward by a dense scar of the cheek. A linear scar external to the outer canthus prevents a worse ectropion of the lids.
(B) A flap was raised from the neck and tubed. At the same operation the lip was released by excising the contracted scar and this defect closed by advancing a small flap. The transplantation of the pedicled flap from the neck into the defect made by excision of the larger scar of the cheek is shown. The flap was shifted to the cheek two weeks after tubing.
(C) Final—one year later. Note upper lip and blending of cheek flap with surrounding skin. The eyebrows are symmetrical and there is no ectropion of either lid.

*Read at the meeting of the Medical Society of Virginia in Lynchburg, October 18-21, 1921.

FIGURE 1, CASE 1—Diagram of Repair.

The larger figure shows the restoration of right eyebrow by division of the wide left brow and shifting a pedicled flap with half of left brow into an incision on the right. By including a wide margin of skin above the upper brow line, it was possible to correct the ectropion of the upper lid which was due to the pull of the supraorbital scar and not to scarring of the lid. The flap of eyebrow was raised and returned to its bed. Transfer of the flap to the opposite side was made eight days later.

(a) Method of advancing mandibular flap to correct deformity of upper lip. The direction of this flap opposes a return of the lip deformity.

(b) Flap with narrow eyebrow in position on level with opposite brow. The width of the flap is sufficient to correct the ectropion of upper lid. Kink of pedicle excised two weeks later. Nutrition of flap excellent. No hair lost. The brow should not be shaved for this operation.

Note excision and oblique suture of line in scar of upper malar region. Method of suture prevents tendency to recurrence of ectropion of either lid.

Practically nothing can be added to the ancient patterns of skin flaps found in the text books of operative surgery. The great difficulty lies in determining before transfer, the viability of a flap fashioned by an illustrated text book design, and this is a phase of the subject calling for considerable experience and judgment.

Adequate study of the defect and careful planning of the repair are probably next in

CASE 2. (A)—Dense scar of neck, right side of chest and arm, from burn received in infancy. Secondary deformities consisted of underdevelopment of right thorax, and deformity of the mandible from traction of scar. The folds of the scar had chronic ulceration and malignancy was feared. The traction of the scar was communicated to the auricle and eyelid.

(B) Outline of flap over right scapula. The circulation was surprisingly good. Pedicle immediately tubed and flap transplanted into large defect resulting from excision of scar of neck. Satisfactory closure of bed of flap made (c) but some separation of skin took place about one week later. Pedicle divided sixteen days later. It contained an artery nearly as large as the external maxillary. The nutrition of the flap gave no concern at any time. Healing was exceptionally good.

(C) Healed scar of bed of flap.

(D. and E.) Final.—Five months after division of pedicle.

Note upper margin of flap and correction of deformity of face caused by traction of scar of neck. The ear and eye have normal appearance. The asymmetry of the lower face (D) is due to dipping of the mandible on the right side. No attempt was made to correct the bony deformity.

importance to a thorough understanding of the problems of local nutrition in plastic surgery of the face. Many errors may be traced directly to the failure to make proper examinations of the deformity. No amount of mechanical skill admittedly so essential in this work can compensate for a vague, uncertain plan of repair or offset a groping visualization of what the final result should be.

The term *diagnosis* takes on a special significance, when used in plastic surgery, and includes not only a general recognition of the type of defect but it also means an estimation of the kind and amount of tissue lost in the original injury and the displacement of the structures about the deformity caused by the healing processes. The study of the defect before operation is greatly aided by photographs and plaster models in suitable cases. If is often necessary to perform a number of operations for the relief of a single defect. It may happen that when the series of operations is well advanced the surgeon's mental image of the original deformity has become very hazy unless assisted by photographic records and plaster casts. A re-study of the plaster cast at such a stage may be of the greatest help not only in planning the future steps of the repair but also in providing a basis upon which the final results may be better visualized. In rhinoplasties, for example, where there is deformity from loss of bone and soft tissues, a model of the defect should be made as a part of the preliminary study, and upon this model may be constructed the type of nose which the surgeon can use as a guide in the various stages of the reconstruction.

CASE 3. (A)—Photograph four months after gunshot wound which destroyed part of mandible, lower lip, upper lip and tongue, with extensive mutilation of the soft tissues overlying the left mandible. A severe infection resulted. This was controlled by Dakinizing the wound.

A long flap was raised from the neck and upper chest and tubed, under local anesthesia, in three stages. The lower end was detached on the twenty-fourth day and folded back on itself to make a lining, instead of cutting a second flap as is usually done.

(B) The folded flap has been shifted into the defect after excising all of the scar. The pedicle was later divided and the proximal part returned to the neck.

(C) Photograph three months after last operation. The border of the lip shows practically no defect where the flap of mucous membrane of the cheek meets the undamaged lip on the right side. This transplant of mucous membrane was fitted into a shallow depression made by excising a strip of the upper border of the folded neck flap. The patient refused treatment for defect of upperlip.

The technique of transplantation of skin flaps has recently received two important accessions through the work of Gillies and Blair, who have emphasized "tubing" and "delayed transplantation" of the flap. Tubing the pedicle of the flap while leaving both ends attached for from one to several weeks is a valuable procedure when it is necessary to shift

whole thickness of skin for a considerable distance. This method is intended primarily to protect nutrition by closing up the raw surfaces of the flap. It has possibilities for harm if a too narrow pedicle is tubed, thereby compressing the vessels and choking the flap with venous blood. In a recent case, untubing on the second day promptly averted the loss of the flap. A living flap will eventually

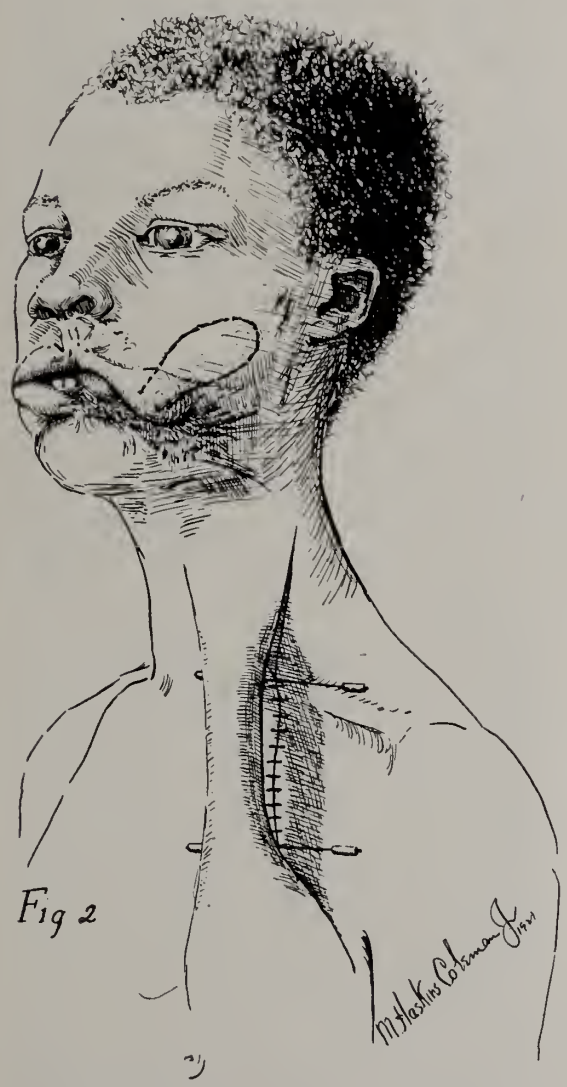


FIGURE 2.—Method of Tubing Flap and Suturing Bed. Note outline of a strip of mucous membrane from the cheek to cover the upper border of the folded flap and reconstruct the lip.

tube itself if its raw surface remains exposed. Artificial tubing of the flap probably resulted from observation of this natural protective process.

Raising a flap from its bed and tubing prepares it for the more severe test of viability which it undergoes when detached at one end and shifted to the defect. Its capacity for survival during the process of transplantation is increased by limiting its nutrition to the pedicle alone for a period before the transfer is made. The gradual reduction of the blood supply of the flap, if carefully done, may be carried to an indefinite extent so that the circulation sufficient for the life of the flap may eventually take on characteristics similar to those existing in plant life.

Delayed transplantation after raising the flap and returning it to its bed is another useful method for testing out and promoting viability before the scar tissue of the deformity is excised and covered by the flap. The advantages of this method have been strikingly demonstrated by Blair. The selection of a flap in suitable cases with a fair sized artery in the pedicle (J. S. Horsley) obviates the necessity of delayed transplantation.

In preparing the deformity, scar tissue should be completely removed whenever this is practicable. Scar tissue disturbed by partial excision is likely to show further contraction. If the complete excision of the scar is not feasible, the mobilization of the residual scar should be so accomplished as to provide for later contraction. The size of the flap should correspond closely with that of the defect, in order that the tension in the flap should be equal to that of normal skin. An exact fit of the flap when returned to its original bed, as in delayed transplantation, is no doubt one of the reasons why it is more likely to survive than if transferred to a defect from one-sixth to one-third smaller than the flap. The contractility of a pedicled skin transplant, if unresisted, impedes the enfeebled circulation. This should be offset by restoring the normal skin tension with an accurate fit to the defect.

The after-care of plastic cases is of equal importance with the surgical procedure. The details of this after-care are largely concerned with the problems of the nutrition of the flap which may be threatened by fluid accumulations, infections and tension or torsion of the pedicle. It may be necessary during the first forty-eight hours to return the flap to its former bed, especially if the pedicle is constricted

by twisting or is pressed upon in its new position. Careful planning of the work before operation and a strict observance of the principles of nutrition will render unnecessary, in most cases, the nursing of sick flaps after the transplantation is done.

503 *Professional Building.*

SOME REMARKS ABOUT CATARACT.*

By JOS A. WHITE, M. D., Richmond, Va.

I must offer an apology for addressing you on such a well worn subject as cataract, with which I have no doubt you are as familiar as I am, but I thought it would not be amiss, as, just now, it is a question of more than usual interest to the ophthalmological world, because of the prominence given it by the discussion of the removal of the lens in its capsule, the so-called intracapsular operation.

This is not an entirely new operation as it dates back to Daviel, to whom we are indebted for the generally accepted cataract operation of today, modified from his flap extraction done in 1745, as he also attempted the intracapsular method in 1748 unsuccessfully. Before him, however, St. Yves and Pettit had removed dislocated lenses in 1707 and 1708 in the capsule. Richter did the operation in 1773 and Beer in 1799, but it fell into disuse until about 1864 or 1865 when it was revived by Sperino, Pagenstecher and Wecker. Macnamara in Calcutta also followed this method about the same time, according to his book published in 1870. Sperino removed the lens by pressure and Pagenstecher removed it with a spoon. He was doing this when I was a student in Germany. The reasons, therefore, set forth by these revivalists, were substantially the same as those of today, viz., that if the lens is removed *in toto*, capsule and all, successfully, we have the ideal eye, a clean black pupil, little or no risk of uveal complications, and no possibility of after-cataract to mar the perfect result. Theoretically, this is eminently correct.

The operation, however, did not make much progress among ophthalmologists of Europe or America, and it remained for India to bring it to universal attention, although S. J. W. Wright, of Columbus, Ohio, published a paper on this method in 1884. Col. Mulroney, of Armitsar, did most of his operations by an intracapsular method, peculiarly his own, and his success drew the attention of Col. Smith, of Jullunder, who took it up in 1895, and has since done over 50,000 extractions. Out of his enormous experience he has modified and changed his original methods, until he worked out his present technic, in which the lens in its capsule is removed by pressure on the globe, made to turn a somersault and come out feet foremost. Other ways of removing the lens in its capsule are, by the spoon, the spoon and pressure combined, with forceps, with forceps and pressure combined, and with the vacuum cup.

Today the spoon is only used as an adjunct to pressure, when pressure fails to deliver the lens, or it becomes dislocated.

Extraction with the forceps was an accident that happened to many, myself among them, who some years ago attempted the removal of the anterior capsule with capsule forceps, instead of opening the capsule with the cystotome in cases with a firm capsule and a weak zonula, the whole lens being lifted out of the eye when the forceps grasped the capsule.

This, which might be called the traction method, has been practiced by Dr. Arnold Knapp, Dr. Torok, Dr. Verhoeff, and others, for some years, using however, the Kalt forceps without teeth, or Dr. Verhoeff's modification of the Kalt forceps. The lens is dislocated by the forceps applied to the lower part of the capsule, and then delivered by pressure, feet foremost as in the Smith Indian operation. Dr. Knapp claims that there is less traumatism, less pressure required than in the Smith Indian operation, and less danger of loss of vitreous. Torok's operation differs from Knapp's in as much as the lens is delivered with the forceps grasping the capsule whilst pressure is applied and the lens is not tumbled.

Dr. Allen Greenwood last summer, in Boston, reported twenty-five cases operated on with the Verhoeff forceps in which he removed the lens without tumbling, and without pressure, simply by traction, which very

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology at Roanoke, April 13, 1922.

much simplifies the operation in cases suitable for it.

The vacuum operation was proposed by Vard Hulen, of Berkley, Cal., in 1910, but Barraquer of Barcelona is the leading apostle of this method, since his first publication in 1917. His latest report of a thousand cases with remarkable success has made Barcelona another Mecca for the ophthalmolgists, as Jullunder has been for some years.

Were I not almost too old a dog to be taught new tricks I would be one of the pilgrims to these shrines, although I have seen the Smith Indian operation done a number of times in this country, both by Col. Smith and some of his disciples, and expect to see Professor Barraquar demonstrate his method in Richmond very shortly.

That I have had an experience of over fifteen hundred cataract operations in my professional career is no reason why I should be wedded to my own method if I can be convinced of a better one as easy of accomplishment with less risk of failure, less traumatism, a lower percentage of accidents and complications, and a greater chance of restoring useful vision to my patients.

Removal of the lens in its capsule is undoubtedly the operation that promises the ideal result, when successful, and any operative technic that reduces the risks of accident in the delivery of the lens to the same level as in the capsulotomy operation, I will gladly adopt, as it does away with the question of after-cataract entirely,—its main merit.

The intracapsular operation, by whatever method, has not the same wide field of application that belongs to the combined extraction, which is suitable to all kinds of cataract at any age over twenty-five or thirty, and sometimes to younger cases, as it is practically limited to persons over sixty years of age, although Col. Smith does it on any kind of cataract and at any age.

It is, however, especially valuable in immature cases over 40 years of age, for which the capsulotomy operation is not desirable. Because of the uncertainty about delivering all of the cortical matter, as we cannot always see it, delivery of these cataracts in the capsule does away with any anxiety on this score, and the attendant risks of complications when the toilet is not complete. Irrigation, however, does much to lessen these risks.

There is no question that the intracapsular operation is the operation of choice, provided the operator has had sufficient experience and has become sufficiently skillful to offer the patient the same chances of success as in the combined operation. The Smith Indian operation requires great dexterity on the part of the operator and great experience on the part of the assistant, so much so that a number of very skillful ophthalmologists who were very favorably disposed to it gave it up, after a few trials, as unsatisfactory in comparison with other methods. The frequent loss of vitreous, even in the hands of the most expert exponents of the operation, does not recommend it for general use. For example, Col. Smith did fifteen extractions at the Illinois Eye and Ear Infirmary, ten at the Chicago Eye and Ear Infirmary, eighteen at the Willis Ophthalmic Hospital in Philadelphia, with vitreous loss six per cent. in the first fifteen, eighteen per cent. in the next sixteen, and thirty-eight per cent. in the eighteen in Philadelphia (over twenty per cent. in forty-nine operations).

Loss of vitreous is not to be regarded lightly; whilst most of the cases with this accident recover fair vision, very few escape some changes in the vitreous that may give trouble.

In many of the Smith Indian operations that I saw done, vitreous was lost and, in speaking to Col. Smith about it, he made light of it. No other ophthalmologist has ever had his remarkable experience with the staggering total of over 50,000 operations, and none have his extraordinary dexterity, and can afford to look at this accident from the same viewpoint. The operation has come to stay, but it will be a long time before it becomes general in this country.

The vacuum operation of Professor Barraquer, I have never seen and therefore cannot criticise it, but his reports are exceedingly favorable, and it subjects the eye to less traumatism. Only seven cases of vitreous loss in one thousand operations is a remarkable record. A seemingly complicated apparatus is necessary for the operation, and may be more

or less of a drawback, for those accustomed to other methods.

The traction operation done by Drs. Knapp, Torok, Verhoeff and others, in which the blunt capsule forceps and pressure both are used, is a modification of the Smith Indian operation in as much as the lens is practically dislocated before pressure is applied, without as much danger of vitreous prolapse.

The same traction operation without pressure as suggested by Dr. Allen Greenwood appeals to me in suitable cases over sixty, immature, mature, or hypermature, and if the small number he reported is any criterion, it is the safest intracapsular operation.

In the intracapsular operation, the important factors for success, besides asepsis, seem to be the control of the lids, and any means of enfeebling or partially paralyzing the orbicularis would be a great desideratum. Col. Smith gives his patients 120 grains of bromide of soda for men and 100 for women from eight to ten hours prior to the operation. He says that this keeps them quiet during the operation and that they sleep well for two or three nights after. Dr. Wurdemann says, as we cannot paralyze the orbicularis, we may paralyze the patient with a one-quarter grain of morphia and a one one-hundredth of a grain of hyoscine given hypodermically. I believe a smaller dose of both would go far in quieting the patient without making him or her too stupid to respond to suggestions during the operation or causing nausea. Dr. Barraquer injects one-half of one per cent. solution of novocain in the tissues outside and below the eye, to block the branches of the facial. Col. Smith thinks that this is of no value. Neither use a speculum, the lids being controlled by an elevator, hook, or the fingers of a trained assistant. Dr. W. A. Fisher, of Chicago, one of Col. Smith's pupils, has devised a special form of lid elevator with a double hook. In the traction method a speculum is used as in the combined operation. It will prevent pressure from the orbicularis if it is kept well up and away from the eye, but holding up the lid is better. Any one who discovers a method of blocking or paralyzing the facial temporarily, for two or three days, will confer a greeat boon on cataract cases.

The preparation of the patient differs little from what we are accustomed to:—a thorough examination as to the physical condition, elimination of all chances of infection, from within and without, seeing that the conjunctiva and lachrymal sac harbor no bacteria, that oral sepsis is eliminated, that the blood pressure is not too high and that the tension of the eye is normal, all some days in advance, and a thorough purgation the night before the operation. In one respect both Col. Smith and Dr. Barraquer do practically what I recommended at the A. M. A. meeting in 1904, differing slightly, that is the use of bichloride, Col. Smith using a one to three thousand solution. The conjunctival sac is flushed out with this solution followed by normal saline. I suggested thorough irrigation and flushing of the sac with a one to ten thousand bichloride solution, after cleansing the lids and orbital area, as for any other surgical operation, then filling the sac with a salve of bichloride, one to three thousand, twelve to eighteen hours before operating, and closing the eye with a bandage, and, just before operating or using the local anaesthetic, flushing with the one to ten thousand solution, thus keeping the antiseptic in contact with the conjunctiva for hours instead of merely washing with it. If, when the eye is opened, any secretion is found, the operation is deferred. If clean, and the operation is done, the eye is again filled with the antiseptic salve. Whilst the solution, one to three thousand, causes considerable irritation, the salve does not, but I do not know why, still the fact remains.

Salves of atropine, eserine, etc., are frequently used in eye troubles and that the contained drug is absorbed is demonstrated by its effect upon the pupil. Is there anything, therefore, to prevent the bichloride from being absorbed into the ocular tissues the same way, and help in sterilizing them? If this is rational, the bichloride salve should be a better means of sterilizing the eye than merely flushing it with the solution, as it is kept in contact with it for several hours. Dr. Barraquer uses the bichloride salve as an eye dressing after the operation. This local preparation is to eliminate postoperative infection, which is rare now-a-days but makes its appearance occasionally in spite of every precaution, because of some avenue of infection being overlooked, or because of some defect in technique.

Dr. Bell, at the New York Eye Infirmary,

in about one hundred and sixty-five cases of extraction, has tried dropping a one per cent. solution of silver nitrate in the eye a short while before operating, which sets up considerable inflammation of the eye, and this he claims is its only objection, as it does not interfere with the operation, and is seemingly a practical specific against infection, having had none in this series. Dr. Lambert has tried it in seventy-five cases with the same result. Personally, I know nothing of this method as I have never tried it. Whether it is as valuable as is stated remains to be seen, statistics being sometimes misleading. I have operated on three hundred and twenty-one successive cases by my own method without an infection, and then had two cases of infection in the next hundred, in spite of every precaution.

Dr. Verhoeff uses a four per cent. solution of protargol to prevent infection, dropped into the eye before operation. Some have recently tried two per cent. solution of mercurochrome in the same way.

Locally, the eye is anaesthetized by most operators, with a four per cent. cocaine solution. Barraquer uses a combination of cocaine, and euphthalmine, five per cent. in "vaseline," at intervals, for one hour and a half to induce deep anaesthesia. Recently the new local anaesthetic, butyn, has been successfully substituted for cocaine, a two per cent. solution dropped into the eye at short intervals for five or six times to produce deep anaesthesia. It has the advantage over cocaine in that it does not strip the cornea and does not dilate the pupil, nor is it as toxic as cocaine, but it produces considerable congestion of the eye and it is better to use adrenalin either in combination or along with it.

The use of atropine or eserine before, or when the operation is done, seems to depend on the experience of the operator, and whether a simple or combined operation is to be done. I think that an iridectomy is usually done now-a-days because of the risk of iris prolapse in the simple extraction. For a long time now, I invariably do an iridectomy as a preliminary in slowly maturing cataract, and in all other cases, if the patient consents; otherwise at the time that the operation is done.

I make a good sized corneal incision, but not 180 degrees as is done by Col. Smith for the intracapsular operation, with a conjunctival flap, and try to make a free capsule opening in the antero-superior periphery as advocated by Dr. Herman Knapp. Several incisions in the capsule are objectionable as pieces of the capsule may remain in the eye and cause iritis. Removal of the anterior capsule with the toothed forceps which I did a number of times, I have given up, as I never could tell how much of the capsule I had removed. Some operators use the blunt forceps for removal of the anterior capsule, with which I have had no experience. Some operators use a corneal suture, de Lapersome, Dujardin, Ellett and others. With this I have had no experience as I have always thought it an addition to the technique that complicated instead of simplifying the operation, even if it did all that was claimed for it by its advocates, and had no advantages over a conjunctival suture which is applied by Verhoeff, Greenwood, Barraquer, etc.

A clean toilet of the operated eye in as perfect removal of cortical debris as possible is all important in the extracapsular operation to prevent secondary iritis and after cataract, but it is sometimes unwise to keep up the pressure or stroking too long, as it may cause striped keratitis, although this also follows the intracapsular operation. Irrigation of the anterior chamber is practiced by some operators, and others think that this is unnecessary, but it is valuable in immature cataract. Iritis and irido-cyclitis and after-cataract, according to Col. Smith, are due to capsule remnants left in the eye, whilst many think they are caused by cortical remains. Be this as it may, both iritis and irido-cyclitis occur at times after the intracapsular operation, as the reports show, and whilst after-cataract rarely does, frequent loss of vitreous brings about later troubles that reduce visual acuity.

When the operation is completed I put a drop of one per cent. atropine in the eye and flush it with a weak solution of bicloride, fill the eye with bichloride salve 1:3,000, put a light bandage on each eye, held by adhesive and a mask over all. I advise perfect rest and quiet in bed, and, if the eye gives no trouble, I leave the bandage alone for two or three days. I then change it, examining merely the appearances of the lids unless some symptoms arise that require inspection of the eye.

Patients that complain of their backs are propped up in bed or allowed to lie on the side.

Usually the unoperated eye is released on the third or fourth day, and the operated eye in a week or ten days, cases varying in this respect as confinement acts differently upon different temperaments. Col. Smith bandages the eye and does not look at it for a week or more. This may be well enough at his clinic in India, but I would be afraid to follow him as it might be fatal to many eyes, in the extracapsular operation, that could be saved by early inspection and the correction of resulting complications.

Questions that arise in considering cataract, such as, when should we operate? how long is the waiting stage? what are the chances of good sight? can commencing cataract be arrested? are of serious moment to the patients and hard to answer satisfactorily. When we should operate depends on the case. If both eyes are in about the same condition or if there is only a slight difference in vision, and vision is appreciably lessened, I always do a preliminary iridectomy on the worst eye, and in my experience the cataract in that eye will mature much more rapidly and can be removed before the other eye becomes blind. If one eye is only slightly involved, I let the case wait until the first eye is ready for operation. When both eyes are so bad that useful vision is abolished and the cataracts not matured, I do not hesitate to remove the worse of the immature cataracts, provided the case is dependent upon sight for support.

How long is the waiting stage? No one knows. Sometimes a cataract advances so far and stops for months; again one that has been dragging on for months will suddenly take a new turn and mature rapidly.

What are the chances of good sight? Who can tell? When a cataract has advanced far enough to shut off a view of the inside of the eye and eye ground, how can we predict the outcome of an operation? Good light projection, seeing shadows of fingers against the light of a window, etc., does not mean that there is no choroidal, retinal or optic nerve trouble in an early stage that may get worse or has already gotten into a stage that would prevent satisfactory vision. I have had this experience more than once, and the disappointment of a poor result from a good operation.

Can cataract be arrested? Possibly, not probably. Some years ago the electric current was vaunted as an arrester of lens changes. It proved fallacious. Now it is suggested to try the subconjunctival injection of cyanide of mercury, one to six thousand, in people over forty, whose sight has fallen to 20-30 or less with faint changes in the lens, and the use of dionin locally. As yet nothing encouraging has come of it. I have seen opacities in the lens disappear spontaneously, but I had no explanation for it. Experiments are being conducted to provide a serum for arresting lenticular opacities, but have not progressed far enough to be hopeful.

What conclusions might be drawn from this brief review of the present cataract question? As far as my experience goes, I would say that, like many other surgical problems, it is best for each one to follow the method or technique that has given him the best results. Although the intracapsular extraction by one or other of the methods suggested would theoretically be the operation of choice, it has not yet, been sufficiently perfected to become a routine operation and displace the commonly accepted extracapsular operation.

In fact, for some forms of cataract, especially in people under forty-five, it will be long before this latter method is relegated to the scrap-heap, notwithstanding the probability of after-cataract developing in a large number of cases, thus necessitating another operation.

Before closing, I would call your attention to the habit of many ophthalmologists in dispensing with the gown, the cap, and the mouth shield, when operating for cataract, and thereby becoming a joke to the general surgeon. We thoroughly sterilize the instruments, and, as far as possible, the field of operation, we scrub our hands, and touch nothing that comes in contact with the eye, but it is also the part of wisdom to follow the rules of strict surgical asepsis to protect the patient from the danger of infection from clothes, expired breath, etc., as the surgeon does. I know of one famous operator who does extractions sometimes with a cigar in his mouth, but I should be rather afraid to follow his example.

200 *East Franklin Street.*

REMARKS ON RAILWAY INDUSTRIAL SURGERY.*

By E. L. KENDIG, M. D., Victoria, Va.

These remarks will be confined to a discussion of a few points in the surgery of railway injuries. They are applicable, however, in a greater part, to other injuries, industrial and otherwise. This paper is based on the nature and result of 1,206 cases of injury sustained in railway service, as shown by my records. I personally attended each case at the time of injury. Some of them were transferred, but the results of each transferred case have been ascertained, and in that way the records are made complete. A large percentage of these 1,206 injured people had multiple injuries and are, therefore, listed under several heads. The percentage given is the approximate percentage. In this series of 1,206 cases there were 12 deaths The causes of death were as follows:

Burns by steam, instant death, 7;
Burns by steam, death 8 hours later, 1;
Shock following severe mutilation, 2;
Crushed body, instant death, 1;
Fracture base skull, instant death, 1.

The remaining 1,194 cases I shall first, in a general way, classify according to the nature of the injury and then according to the location. Classified by the general nature of the injury, they are as follows: lacerations, contusions, abrasions, etc., 406, or 34%; eye injuries 286, or 23%; sprains 158, or 13%; deep cuts and lacerations 155, or 12%; burns 115, or 10%; fractures 71, or 6%; crushed members 68, or 5%; nail punctures 20, or 1.6%; and dislocations 7, or .05%. In addition, there were five cases of broken teeth, four of concussion of the brain, two of traumatic orchitis, two of traumatic synovitis of knee, one of dog bite, one of heat prostration, one of electric shock from phone, one of cellulitis of hand, one of railway spine or traumatic neurasthenia, and one case of laceration of the posterior urethra. Classified in a general way by the location of the injury, they are as follows: hands 305, or 25%; eye 286, or 23%; head, neck and face, except eye, 232, or 19%; legs 162, or 13%; feet 138, or 11%; trunk 127, or 10%; and arms 100, or 8%.

It will be seen in the above series that the number of injuries of different types occur in the following order of frequency: 1st, lacerations, contusions, abrasions, etc.; 2nd, eye injuries; 3rd, sprains; 4th, deep cuts or lacerations; 5th, burns; 6th, fractures; 7th, crushed members; and 8th, dislocations. The parts of the body injured occur in the following order of frequency: 1st, hands; 2nd, eye; 3rd, head, neck and face, except eye; 4th, legs; 5th, feet; 6th, trunk; and 7th, arms.

It will be observed that the mortality rate is less than 1%. It will also be noticed that the list includes a large variety of injuries and some not usually expected among railway injuries.

The main points to be first considered in industrial injuries are the relief of pain, treatment of shock, control of hemorrhage, administration of stimulants when needed, a prevention of further infection of wounds by protection and cleanliness, and a provision for the general comfort of the patient. After this is done, steps should be taken to ascertain the extent and nature of injury and proper treatment should be provided for. Morphia should be used for pain. The treatment of shock will depend upon its severity. The psychic effect of the surrounding circumstances of an accident has a tendency to aggravate or even produce shock. It is not advisable to use a tourniquet for any length of time. When used, it should be put as nearly over the injured tissue as possible. For the removal of grease around the wounds, nothing is better than ether, benzene, or plain gasoline. This dissolves the grease, takes off the dirt with it and, at same time, is an antiseptic. If used early after injury, iodine is one of the best antiseptics for use in contaminated wounds. There is no need of mentioning soap and the long list of antiseptics which are used to advantage. Dichloramine-T is especially good in wounds with debris or dirt.

In the examination of the patient be sure to remove all the clothes necessary to ascertain extent of injury, provided the patient is kept warm and comfortable. After examination, the patient should be placed where, in the opinion of the attending surgeon, he will have the best treatment.

At this point I will mention a method of suturing tendons, which I have found satisfactory. The method is simple and no doubt

*Read before the Southside Virginia Medical Association in Norfolk, June 13th, 1922.

common, although I developed what I know about it from experience. The suturing of tendons is sometimes found difficult in minor industrial operations. With a fine needle, begin at one of the ends of the cut tendon and put in three or four continuous or running sutures along the course of the tendon

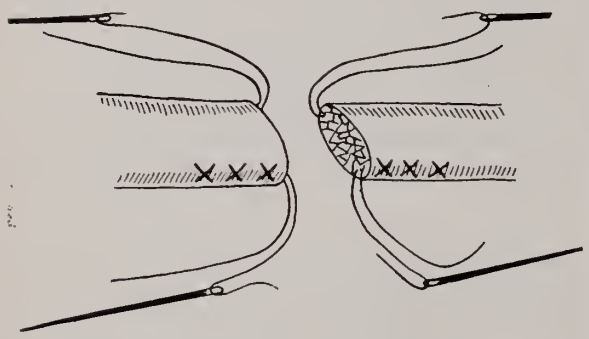


Diagram of sutures before the opposite ends are tied tight enough to bring the ends of tendon together.

for about one-quarter of an inch, taking in only a few fibres of the tendon with each bite of the needle. Then reverse the course of the sutures and come back to the point of beginning. Leave the two ends of the thread together and cut them off about four or five inches long. Put in similar sutures on the opposite side of the same end. Suture the other end of the tendon in like manner, taking care that the sutures on the two ends of the tendon are opposite each other when the tendon is returned to the normal position. Tie the opposite ends of the threads together tight enough to bring the tendon ends well together. This method does not preserve the outer coat of the tendon as well as some others, but it possesses these advantages: it can be quickly done, it can be easily performed with few or no assistants, its use is well adapted to small tendons, the union is strong enough to hold the tendon together in most any position, and it is a method that will give a good functional result.

In the diagnosis of fractures, a tender point on the bone is a good sign. The use of the X-ray, when available, is positive. It is best to X-ray all possible, rather than all probable, fractures. It is of great advantage to the surgeon when he can use the fluoroscope himself. The reduction of most fractures should be done under a general anesthetic. In handling fractures, we should differentiate between disability and deformity. The restoration of function is more important than the restoration of form.

Wassermanns are recommended in all cases of fracture with delayed union. Dr. J. H. Stokes, of the Mayo Clinic, reports that, in a series of 3,000 cases, it was found that syphilis was eight times more prevalent in railroad men than in farmers, three times more prevalent in railroad men than in business men, and two times more prevalent in railroad men than in laborers.

Prophylactic doses of antitetanic serum should be given in all cases with contaminated wounds, and repeated every six or eight days until the wound is healed.

In a previous paper before this association, I called attention to the use of local anesthesia in cases of traumatic injury. The use of novocain or apothesine in selected cases will render the necessary operative work painless. The use of these local anesthetics is practically without danger and will in a large number of instances take the place of a general anesthetic.

In the prevention of industrial injuries much has been done. One point, however, should be considered. It will be seen from the above series that almost one man in every four injured, sustained some injury to the eye. The eye is an important organ to the working man, and any preventive method would be a step forward.

I would at this time like to emphasize the importance of conservative surgery in industrial injuries. I do not only mean conservatism in severe injury, but I mean conservatism in every class of injury. The preservation of the hands, the feet, the arms and the legs are particularly important to the industrial worker, because it is with these that he earns his living. It will be noticed from the above series that 25% of all cases had some injury of the hand, and that 56% had some injury of either the hand, foot, leg or arm. Cleanliness is one of the most important measures in saving injured tissue. With a proper regard for the circulation, parts apparently injured beyond repair can sometimes be saved. Conservatism will save an arm or a leg in many instances. It is much easier to amputate an injured member than it is try to conserve it, but it is our duty not to amputate when in doubt. In injuries of the foot, the preservation of the arch of the foot is important, es-

pecially to the industrial worker. Foot injuries should be X-rayed from time to time to see that the bones are maintained in their proper relation and the arch of the foot preserved. It is very easy to amputate a finger when crushed, and when amputated it is usually well in ten days, but, if with a little more trouble on the part of the surgeon and with a little longer disability to the patient, we can save to an industrial worker a finger or a good part of a finger, this is unquestionably our duty. In treating an injury of the finger, leave all the bone possible under the circumstances, provided the flexor and extensor tendons are attached to insure its usefulness. By leaving the bone in this manner, the soft parts of the finger will grow over the end and will result in a useful finger. You can in this way save whole fingers in some cases, and in others you can save a phalanx. I have found one exception to this rule. When two phalanges of the forefinger are injured beyond repair, it is best, with the consent of the injured man, to remove also the third phalanx, making a more useful hand by not leaving a stub between the thumb and the middle finger, the future forefinger of the hand.

To obtain the best results from an industrial surgeon, the work should be done by good men adequately paid.

G. H. Sheridan, who a short while ago resigned the position as lay executive secretary of the Ohio State Medical Society after six years of a most successful work with perhaps the best organized body of medical men in America, and who is an authority on the business side of the physicians' work, says that the maintenance of proper fees makes it possible for the physician to render an adequate service.

The type of man needed for good service in the field of industrial surgery is not the one who performs his duty in a listless and perfunctory manner, taking it for granted that he will be paid for his work anyhow, but the man who is interested in each case, who is well qualified for the service, and who takes the time and the trouble to master and understand its particular problems.

References.

Mayer, L., Jour. A. M. A., Nov. 15, 1919.
Carroll, W. B., Sou. Med. Jour., June, 1922.
Magnuson & Coulter, International Clinics, 3:195, 1921.
Newell, E. T., Sou. Med. Jour., May, 1922.
Leigh, Southgate, Int. Jour. Surg., Feb., 1922.
Hammond, R., Jour. A. M. A., July 24, 1920.
Sherman, W. O., Modern Medicine, Jan., 1921.
Palmer, J. W., Sou. Med. Jour., May, 1921.
Washburn, W., Amer. Jour. Surg., April, 1920.
Blackburn, J. H., Sou. Med. Jour., Feb., 1922.
Donoghue, F. D., Boston Med. & Surg. Jour., Sept. 18, 1919.
Harpster, C. M., Modern Medicine, Aug. & Sept., 1919.
Blake, W. H., Sou. Med. Jour., April, 1922.
Patterson, F. D., Jour. Sociologic Medicine, Feb., 1919.
French, J. R., Nation's Health, Dec., 1921.
Ellis, J. D., International Clinics, 3:229, 1921.
Selby, C. C., Modern Medicine, May, 1920.
Selby, C. D., Modern Hospital, June, 1919.
Maxeiner, S. R., Modern Medicine, March, 1920.
Thomason, J. E. M., Jour. Industrial Hygiene, Oct., 1920.
Little, R. M., Modern Medicine, June, 1919.
Little, R. M., N. Y. Med. Jour., Dec. 20, 1919.

THE RELATION OF AGE TO DISEASE IN CHILHOOD.*

By WINGATE M. JOHNSON, M. D., Winston-Salem, N. C.

The relation of age to disease is a subject full of interest and, in childhood, of much practical importance. In discussing this subject, I want to consider primarily the relation of age to the incidence of various diseases, and secondarily its relation to symptomatology, diagnosis, prognosis and treatment.

The Newborn Infant.

The chief dangers in the path of the newborn infant are asphyxia, cerebral hemorrhage, atelectasis, septic infection through the umbilicus, the peculiar hemorrhagic disease of the newborn, and the so-called inanition fever. Of less danger to life but of dreadful possibility is gonorrheal infection of the eyes. Icterus is a frequent but usually benign infection. Mastitis, abscess of the breast, and even septic infection may follow ill-advised attempts to express the milk which is often found in the breasts of the newborn. Congenital laryngeal stridor is apt to give the parents much concern, though really benign. It may persist into the second year.

Congenital syphilis will usually manifest itself within the first two months, but a positive Wassermann may not develop until after the sixth week.

Of the acute infectious diseases those of the respiratory tract, particularly bronchitis and broncho-pneumonia, are the only ones com-

*Read before the Medical Society of the State of North Carolina, at Winston-Salem, April 26 1922.

mon to the newborn and are responsible for many deaths.

1. The relative immunity to the Acute Infectious Diseases which the mother's milk seems to bestow begins to diminish after the first six months, and from the second year to puberty is the period of greatest susceptibility to childhood's peculiar diseases. The Schick test demonstrates this in the case of diphtheria, showing that nearly all children under six months are immune; that the period of greatest susceptibility is from six months to six years; and that after six years the percentage of those immune rapidly increases. This infantile immunity does not hold true of the respiratory diseases.

2. Tuberculosis is rarely evident within the first six months but is most apt to develop within the first five years, the second year being the period of greatest susceptibility. While the child is rarely born infected with tuberculosis, he is very susceptible from birth to contact infection and, in the early years of life, tuberculosis is peculiarly fatal. It is very apt to become generalized. The lesson to be drawn from this can not be over-emphasized,—namely, the criminality of exposing an infant to any one even suspected of having the disease.

3. The Nutritional Diseases — scurvy, rickets, and its associate, tetany—develop between 6 and 18 months. Rheumatism, on the other hand, is practically unknown under three years. A knowledge of this fact should prevent the mistake of diagnosing scurvy as rheumatism.

4. The Digestive System.—As long as the baby is breast-fed exclusively and sufficiently, aside from such minor ailments as thrush and colic, there are only two troubles of this system to be really feared. These are hypertrophic pyloric stenosis, which is to be looked for between two weeks and two months, and intussusception, which may occur at any age but is most apt to come within the first two years, particularly between four and nine months. After breast milk is replaced by other foods, however, the danger increases in inverse ratio to the care with which the food is selected and prepared. The susceptibility of the young child to intestinal infection is well known but, in passing, I would like to say that the practice, now happily becoming wide-spread, of boiling all cow's milk used in artificial feeding has done more than anything else to prevent the diarrheal diseases of infancy. In my own experience, I can count upon the fingers of one hand the cases of dysentery seen in children fed on boiled milk.

Tonsillitis may occur early though it is not frequent under six months. A point of practical importance is that children even up to six or eight years usually have very little pain with it. The wisdom of examining the throat as a routine procedure is too well known to require emphasis. Peritonsillar abscess is rare in early life while retropharyngeal abscess occurs in the first two years only and may easily be confused with laryngeal diphtheria.

5. The Respiratory System.—Throughout the first two years of life the respiratory system is peculiarly susceptible to invasion and its diseases have a high mortality. I need hardly remind you that the large size of the bronchi and the thinness of the chest walls give a respiratory murmur normally differing from the adult type, in being harsher and more nearly bronchial.

Congenital laryngeal stridor, already mentioned, begins at or very soon after birth. In differentiating the other affections of the larynx from laryngeal diphtheria, the age-incidence is of little help as they may all occur after six months.

Bronchitis and broncho-pneumonia, as previously stated, are very frequent throughout infancy and childhood. Lobar pneumonia is rare in the first year but common thereafter. Empyema is much more frequent in early childhood and has a much higher mortality—seventy-four per cent. for the first year and fifty-nine per cent. for the second, against thirteen per cent. for older children. (Holt.) Serous effusion is comparatively rare in childhood.

It is of some importance to remember that asthma often begins in early childhood. According to Still, the great majority of all cases begin within the second and third years.

6. Otitis Media is so frequent in infancy and its complications may be so formidable as to require special mention. It is usually secondary to some upper respiratory infection and may result in mastoiditis, permanent deafness, sinus thrombosis and septicemia.

7. Circulatory System.—The heart is relatively large in childhood. Its position in the chest is nearly horizontal with the apex beat outside the nipple line, in the fourth in-

terspace. From the fourth to the ninth year it gradually moves downward to its adult location.

Excluding congenital heart disease, the heart is rarely diseased under three years. Accidental murmurs occur in nearly fifty per cent. of all children, according to Hamill and others, but true endocarditis is almost unknown under three years. Only one case occurred under this age in more than 2,000 autopsies at the Babies' Hospital in New York. The age-incidence of endocarditis is the same as its great cause, acute rheumatic infection, from three or four years up. A peculiarity of rheumatism as it affects children is its liability to affect the valves of the heart in contrast to the slight joint manifestations. The "growing pains" of childhood should never be dismissed lightly as they may be really rheumatic and cripple the heart for life. Pericarditis is much less common in childhood. It, too, is usually rheumatic in origin and has the same age-incidence.

8. Kidneys.—Acute nephritis as a primary affection is rare in childhood. It is usually secondary to some infection, notably scarlet fever, and frequently ordinary tonsillitis. During our recent epidemic of "near" influenza, I was interested to note that practically every urine examined within several days after the attack showed albumin and casts. Still more interesting was the fact that they all cleared up promptly with no special treatment. There is no special age limit for acute nephritis other than that of the infections to which it is usually secondary. The prognosis is better than in an adult. Chronic nephritis is rare under five and has an unfavorable prognosis.

Pyelitis may occur at any age but is far more frequent under two years. It may cause alarming symptoms though the prognosis is usually good with proper treatment. It rarely occurs in boys. After the second year both the frequency and severity of the cases diminish.

9. Nervous System.—Perhaps the greatest difference between an infant and an adult is the enormous disproportion between the infant's central nervous system and the rest of his body. A crude comparison is that of a dynamo capable of running a printing-press attached to a sewing machine. So much electrical energy would be hard to control with so small an outlet. Similarly, the relatively large dynamo of nervous energy pent up in the infant's tiny body is hard to control. The child is in a state of "nervous instability," to use a favorite expression of Dr. Still's. His breathing is irregular; the pulse is frequently so, particularly during digestion, when the vagus nerve supplying both the heart and the digestive organs gets its messages short-circuited. A child's heat-regulating center is more unstable and responds to infection or disturbances of metabolism with a temperature far higher than would be produced by a similar condition in an adult. Likewise, the demand for a rapid dissipation of nervous energy, which is met in the adult by a chill, may in a child cause a convulsion.

The lesion of the brain most to be feared in the newborn is cerebral hemorrhage from birth pressure, which, if not immediately fatal, is apt to blight the individual through life. To Dr. Sidbury, of Wilmington, N. C., is due much credit for pointing the way to relieving many of these cases by early and, if necessary, repeated lumbar punctures.

Idiocy, except of the Mongolian type, can rarely be recognized before the end of the first or during the first half of the second year. The peculiar features of the Mongol may make its recognition possible within the first few weeks. Cretinism may begin to show its characteristics during the latter half of the first year. Its early recognition is, of course, important, but I think you will all agree with me that it is usually best to wait for the parents themselves to recognize the presence of other varieties of mental defectiveness.

Epilepsy is most apt to begin at puberty or during the first three years of life when there is special activity of physiological development. The older the child at onset, the less the danger of mental deterioration (Still).

Tetany is regarded as a manifestation of rickets with the same age-incidence, six to eighteen months.

Chorea is generally regarded as a rheumatic manifestation and has the same age-incidence, four years and older.

Hysteria is rare before the tenth year.

Cerebral abscess is rare under ten years. Tumor of the brain is more common and is possible at any age.

Acute poliomyelitis is most usual during the second year and eighty per cent. of the cases occur within the first four years.

10. Blood.—Except in the first few years,

of life, the hemoglobin is relatively low in childhood, sixty-five per cent. to eighty-five per cent., reaching the adult level at about sixteen years. The red cells are correspondingly reduced in number. The white cells are increased. The normal variations in infancy are 9,000 to 18,000; in later childhood, 8,000 to 12,000. The lymphocytes are greatly increased, varying normally from fifty per cent. to seventy per cent.

Secondary anemia is very frequent throughout childhood. Prolonged nursing or exclusive milk feeding is a frequent cause after the tenth month. Improper feeding may cause it at any time. Acute infections, intestinal parasites, syphilis, and hemorrhage are all potent causes.

Primary anemias are much more rare than secondary.

Von Jaksch's anemia is to be looked for between seven and twelve months.

Acute lymphatic leukemia is perhaps the form most frequently met, and often shows a leukopenia rather than a leukocytosis, but with a lymphocyte count above ninety per cent.

Pernicious anemia is very rare in childhood.

Chlorosis is to be looked for in girls at puberty.

Purpura occurs after the second year—later than scurvy.

True hemophilia is rarely seen before the third year and bears no relation to the hemorrhage of the newborn.

In infancy and early childhood there is an increased susceptibility to septicemia. In its treatment brilliant results have recently been obtained by repeated transfusions of whole blood immediately after the withdrawal of a corresponding amount of the patient's blood. Stetson, of New York, is doing a great deal of work along this line. He stated to me not long ago that septicemia was the most satisfactory grave condition he had to treat.

11. Lymph Nodes.—In infancy and early childhood the lymphoid tissue is in excess and is prone to give trouble. The tonsils and adenoids serve as portals of entry for infection which may secondarily affect the ear, the cervical lymph glands, and may even poison the whole system with a general septicemia.

Simple acute adenitis is very frequent in infancy, particularly from six months to two years. It is usually secondary to tonsillitis, rhino-pharyngitis, or other acute infection. Tubercular adenitis, on the other hand, is most apt to occur in later childhood, from three to eight years.

Hodgkin's disease is practically unknown under three years.

12. Bones and Joints.—Rheumatic fever is almost never found under three years. The acute arthritis and acute osteomyelitis of infants is an evidence of pyemia and is usually seen in the first year. Tuberculosis of the bones and joints, on the other hand, is found between three and eight years.

In conclusion, let me remind you that in most diseases of infancy and childhood the determining factor is most often the ability of the little patient to assimilate enough nourishment to tide him over, and any medication which tends to upset his digestion is likely to do more harm than good. I know of no better advice to leave with you than that given my class at our last clinic at Jefferson, by Dr. H. A. Hare—"For God's sake let the patient get well!"

302-303 *O'Hanlon Building.*

DISEASES ASSOCIATED WITH PROTEIN SENSITIZATION.*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

Those conditions which depend either wholly or in part on protein sensitization and anaphylaxis for their clinical manifestations, form a not inconsiderable proportion of the commoner diseases. Measles and the exanthemata, typhoid fever, malaria, urticaria, eczema, hay fever and bronchial asthma, fall within this classification. In fact it is claimed, with much apparent justification, that fever in and of itself is a phenomenon of protein intoxication. An understanding of the biochemistry of sensitization and anaphylaxis is essential to a comprehension of the pathologic physiology of these diseases.

When a foreign protein is introduced parenterally into the body, it will continue to exist as such until the body cells have elaborated a ferment capable of digesting that protein. Whether it be a living micro-organism or unorganized material, such as serum or egg albumin, it will persist in the circulating

*From the Medical Clinic of St. Elizabeth's Hospital. Read before the South Piedmont Medical Society, at South Boston, Va., April 18, 1922.

blood,—and, if living, as in the case of bacillus typhosus, may multiply therein, until sufficient enzyme has been produced to digest and destroy it. Thus, the optimum time for positive blood cultures in typhoid fever is before the symptoms of the disease have become manifest. Again, Longcope has shown that horse serum injected into rabbits exists as such until after the development of serum sickness.

Normally, the body tissues are not provided with specific ferments or enzymes for those proteins which should have been digested before absorption from the intestines. Once having acquired the ability to digest a protein, however, the cells retain that power, and can reproduce the specific ferment whenever stimulated by the presence of the foreign protein. From ten days to two weeks is usually required for the original elaboration of the ferment, but thereafter the introduction of the protein calls forth an almost instantaneous production of the ferment or antibody.

Every protein consists of a poisonous and a non-poisonous portion. The poisonous portion of the molecule is in all probability chemically and biochemically similar in all proteins. The non-poisonous portion is different, for every protein, and on this differentiation rests the specificity of the protein. The newly formed ferment digests away the specific non-toxic portion of the molecule, thereby liberating the poisonous fraction. Symptoms of protein intoxication result from the liberation within the body of the poisonous non-specific portion. While the tissues are first learning to produce the ferment, the protein is split slowly, so that at no one time are large amounts of poison present, and the symptoms are either absent or very mild. However, mild symptoms may follow even the first injection of foreign protein, as in the familiar cases of serum sickness. The slow liberation of poison prevents any serious reactions.

If, after the body cells have become sensitized—have learned to pour out rapidly the new digestive ferment or antibody,—the antigen or foreign protein be again administered parenterally, the high resultant concentration of ferment produces such rapid digestion, and liberates such large amounts of poison in a short time, that serious symtoms result. In this way, typical anaphylactic shock is produced. The symptoms are not necessarily respiratory. In the guinea pig, anaphylactic death is respiratory and the symptoms are of asthma. In the dog, they are chiefly circulatory. All parts of the body are involved in anaphylactic shock, and the symptoms may vary accordingly, although they are usually manifested by dyspnea and urticaria with the general symptoms of shock.

In typhoid fever, when the tissues at length become sensitized, the growth of the bacilli in the circulation has produced such large amounts of protein to be digested that serious symptoms ensue, with the clinical picture of typhoid fever. In malaria, the extrusion of the plasmodia from the red cells into the plasma where digestion rapidly occurs, gives rise to the characteristic rigor and high fever. In the exanthemata, as in typhoid fever, the incubation period is that interval during which the invading parasite is multiplying in the tissues, and in which the body cells have not yet become sensitized. The measles rash is probably an anaphylactic or sensitization phenomenon. Meltzer suggested in 1910 that bronchial asthma may be an anaphylactic phenomenon. Since then many workers have studied hay fever and asthma as a possible sensitization disease. Walker has been a pioneer in this field, and we owe much of our practical knowledge to his painstaking investigations.

For some unknown reason, certain individuals absorb pollen protein undigested into the circulation and thereby become sensitized to it. In succeeding pollen seasons, repeated absorption gives rise to anaphylactic symptoms. We do not know why some people become sensitive, while others do not. Mechanical abnormalities in the nose probably play a part. It has been shown that protein of this nature can be digested to a certain extent by the normal nasal secretion. But with defective aeration, as behind a nasal spur, abnormal quantities of mucus collect, and here the protein is incompletely digested and is absorbed through the nasal mucosa. It has also been shown that the absorption of undigested protein through an apparently intact mucous membrane renders that surface more permeable for subsequent absorption of protein. An overdose or massive dose of pollen might overcome the resistance of any individual, irrespective of local pathology. Sewall has pro-

duced sensitization in guinea pigs by application of horse serum to the nasal mucous membrane.

Much has been written on sensitization in asthma and hay fever, and many illustrative cases have been described. I have, therefore, chosen only a few illustrative cases from my series which have been particularly interesting to me, as being unusual, or as indicating sensitization in conditions other than typical asthma or hay fever.

The first case is one of typical bronchial asthma with sensitization to a food protein alone, and which showed striking therapeutic results:

Mrs. M. D., Case No. 6285. Diagnosis, bronchial asthma. The onset of the asthmatic attacks was six years before the time of first examination (June, 1921). Previously, she had been perfectly well. The development was sudden, and for the last six years not a day had passed in which she did not have at least one, and frequently several, attacks of asthma. They almost always started at night after going to bed, but occasionally also in the day-time when up and about. The patient had had various forms of treatment, including several "serums," the omission of certain articles of food from the diet, etc. She had spent some time in a tuberculosis sanatorium She had never had urticaria.

The patient was examined by the usual routine, and gave a clearly positive skin reaction to the protein of cocoa, with a borderline reaction to ten other proteins, including wheat glutenin.

The patient omitted all of these articles from the diet, and during the succeeding nine months has had but one attack of asthma, and this definitely following a break in her diet, when she ate some hot wheat bread. She has gained around fifteen pounds in weight, and, whereas she was previously house-fast, she now gets around and does what she pleases without discomfort.

The second case is neither hay fever nor asthma. The symptoms, however, resemble very much the former:

Mrs. M. A., Case No. 279, aged 47, housewife, dated present illness from April, 1921, when she had three teeth extracted for the relief of toxic headaches. Root abscesses had been found previous to the extraction. Soon afterwards she developed a rhinorrhea. She would develop sudden violent attacks of sneezing, without apparent provocation, followed by "streaming" of watery fluid from both nostrils. At other times the nose would be so stopped up that she found it necessary to use adrenalin for relief. The attacks were irregular, coming more frequently in the early morning. Irrigations gave only temporary relief. She had been examined by a competent oto-laryngologist, who found no local pathology, and was inclined to consider the condition nervous. The patient had never had hay fever. She had never before had a condition similar to the present. The present illness began before the onset of the pollen season.

The patient was tested with various pollen, food, bacterial and epidermal proteins, and gave a negative reaction to all except corn pollen, chicken feathers, goose feathers, dog hair, diphtheroid bacillus, and streptococcus viridans. There was no dog in the home. Cultures from the nose showed a pure culture of micrococcus catarrhalis. A vaccine was prepared from this culture.

The strongest reaction in this case was with chicken and goose feathers. The patient was therefore directed to procure "silk floss" pillows, and to discard all feather pillows. She was not seen again until one month later, when she reported that removal of the feather pillows had given practically immediate and permanent relief. It has not been found necessary to use the vaccine. At the present time the patient reports that she has continued symptom-free except for three days in December, when she inadvertently ate a small amount of corn. This dietary indiscretion was followed within a few hours by rhinorrhea. It is worthy of note that in this case the patient did not react to the protein of the corn grain, but to the corn pollen. It was the grain, however, which produced symptoms.

The next case is somewhat more complicated. The patient shows multiple sensitization, and clinically has both hay fever and a vasomotor rhinitis, together with what he describes as "bronchial asthma."

Patient W. A., No. 6182, male, aged 32, insurance agent, was admitted to St. Elizabeth's, November 23, 1921. He complained of hoarseness and shortness of breath, with a chronic cough, and occasionally the raising of blood.

The patient had had hay fever regularly for the preceding five years, lasting from early in August until the first frost. Toward the end of each attack he would develop a cough with wheezing and shortness of breath. During the last two years he had frequent typical asthmatic attacks. Following the last attack of hay fever in 1921, the pulmonary symptoms persisted, with constant cough, hoarseness, anorexia, and the raising of some yellow, mucopurulent, tenacious sputum, often streaked with bright blood.

This patient's symptoms first began with uncomplicated hay fever. After a few recurrences the attacks lasted longer, and were accompanied by pulmonary symptoms of an asthmatic character. Finally, following the last hay fever season, the condition has persisted with symptoms of chronic bronchitis and bronchial asthma.

In addition, the patient described atypical attacks of "coryza" since childhood, coming on after meals. If he lies down for a time after eating a heavy meal, he will awaken with sneezing and a watery discharge from the nose, which may persist throughout the afternoon or evening, and until the next morning. This occurs irrespective of pollen seasons.

The patient was tested out with the proteins routinely used. Among the pollens he gave a four plus reaction to short ragweed, two plus to corn, and one plus to daisy, goldenrod and black walnut. Among the epidermal proteins there was a one-plus reaction to cattle hair and to chicken feather. The food proteins giving a positive reaction were corn, strawberry and oat, four plus; grapefruit and turnip, three plus; pea and wheat glutenin, two plus; and potato, rice, sweet potato, tomato, lima bean, wheat gliadin, wheat proteose, wheat leucosine, plus-minus. The patient gave a one-plus reaction to the protein of diphtheroid bacillus.

In this case the sensitization appears to have been primarily to a pollen protein alone. During an attack of hay fever, the opportunist organisms present in the normal respiratory mucosa found opportunity to grow in the damaged mucous membrane. It is probable that there was early sensitization to some of the food proteins as indicated by the long history of vasomotor rhinitis, occurring after heavy meals. The strongest reactions were to corn, strawberry and oat, and it is possible that one of these was the original sensitizing protein.

The treatment in this case has been directed, first, against the bronchitis; second, against the food intoxication; and third, against the pollen sensitization. In addition to medicinal therapy for the bronchitis, an autogenous vaccine was prepared. The patient was directed to omit all four plus, three plus and two plus articles of food from the diet, and was cautioned against taking cold. Improvement was almost immediate, and from December, 1921, until the end of March, 1922, the patient was practically symptom-free. He was taking the autogenous vaccine over this period and, as soon as the vaccine was discontinued, his symptoms began to recur in altered form. He no longer had his attacks of asthma or rhinitis, but he coughed more. In other words, the bronchitis alone returned.

It frequently occurs that several courses of vaccine must be administered, and sometimes this must be continued for a long time, the patient feeling well only while taking the vaccine. It will be important to desensitize this patient before the next pollen season, or to have him go to some locality, such as Florida, where there is little or no ragweed pollen.

The hay fever in this case is clearly due to pollen sensitization. The vasomotor rhinitis was, with equal probability, a result of food sensitization. The bronchial asthma on the other hand, was more probably not a true bronchial asthma, but rather an asthmatic bronchitis. The infection causing the bronchitis undoubtedly obtained a foothold in mucous membrane already damaged by hay fever, but that it was a true bronchitis and not a pure asthma is indicated by the fact that the patient constantly raised large amounts of sputum, and that rales were always to be heard in the chest. During the period in which I had him under observation he had many spells somewhat resembling asthma, but evidently due to difficulty in raising the thick, tenacious sputum, and the breathlessness occurred more from the effort expended than from bronchial spasm. This condition, described by Walker as "asthamatic bronchitis," results chiefly from mechanical causes. Bacteria rather than unorganized proteins are usually the causative agent, and there may or

may not be recognizable sensitization to these bacteria.

The next case is one which illustrates better this condition of asthmatic bronchitis, in that it is less complicated by other findings. The effect of mechanical irritation by dust is very distinct:

Mrs. A. M., No. 6352. Diagnosis, bronchial asthma, chronic bronchitis, and hay fever. Duration of symptoms, eleven years. First seen August 24, 1921. During the first two or three years her symptoms had been limited to attacks of hay fever, but asthmatic attacks soon supervened. On examination she had a chronic bronchitis and raised considerable sputum at all times. There were frequent superimposed "asthmatic" attacks. It is interesting to note in her history that shortly before examination she had been out of town for seven weeks, during which time she had had no asthma. Immediately upon her return home the attacks recommenced.

The patient was tested routinely with the various proteins, and was found to react to sunflower and daisy, with a milder reaction to giant ragweed, short ragweed and June grass. There was a completely negative reaction to all epidermal and food proteins except rice, which gave a very mild reaction. Thus, we have a case sensitive only to pollen proteins, but who has chronic bronchitis with attacks of asthmatic bronchitis throughout the year. The assumption was that the case was pre-eminently bacterial.

An autogenous vaccine was made. In view of the curious history of freedom from symptoms when away from home, a search was instituted for anything in the house which might be causing the attacks. There were no pets, no domestic animals, and no birds. The floors were covered with old-fashioned carpets, and were quite dusty. I suggested that the carpets be removed, the floors cleaned, and that rugs be substituted. This was done, in conjunction with the administration of autogenous vaccine. During the intervening five months the patient has, according to her report, been absolutely well, except for one spell of asthma one month ago. She had been telling a neighbor of the excellent results obtained by removing the carpeting from the floor. Her neighbor decided to do likewise with some linoleum, and the patient offered to help her. That night, according to the physician who attended the patient, she "almost died" of an attack of bronchial asthma.

I have been particularly interested in the study of two other diseases in relation to protein sensitization. There have been some suggestions in the literature that they might be dependent on protein sensitization, but little experimental work has so far been reported. These are migraine and mucous colitis. The latter disease is not entirely dissimilar to bronchial asthma. In both diseases the two outstanding features are smooth muscle spasm and increased secretion of mucus. The difference lies chiefly in location within the body. In both conditions, headache of a migrainous type is rather common. Headache was first described as accompanying hay fever in 1600. Naturally, there are many causes of clinical migraine, but some cases apparently are due to protein sensitization. The two following illustrate this point:

Miss M. M., Case No. 6355, aged 30, was first seen in July, 1921. Her chief complaint at that time was enterologic. In September she began having severe headaches of a migrainous nature, coming on as often as three times a week. These persisted without let up. On December 4th she was tested with the various food proteins, and gave a two plus reaction to sweet potato, turnip and rice, and a one plus reaction to chicken, pea, oat, corn, cocoa and wheat glutenin and wheat leucosine. The reactions did not become positive until six hours after the test was made.

The patient was directed to omit rice, sweet potato and turnip from her diet. From that time until the present she has had no recurrence whatever of her migraine. It developed after the test that she was very fond of sweet potatoes, and had been eating them daily for the preceding three or four months. The patient has been under my treatment for various other conditions since July, 1921, so I do not believe that suggestion can play any part in this case.

Miss H. F. No. 6323. Diagnosis, migraine. The patient had been subject to attacks of sick headache during early childhood. They had ceased at the age of seven, and she had been headache-free until 1918, when the symptom returned. At first the attacks came at two or three months' intervals, but the fre-

quency increased, so that at the time of examination she was having typical migrainous headaches as often as once a week.

After various other forms of treatment had been tried, the cutaneous tests were applied. Strongly positive reactions occurred to sweet potato; positive to beet, turnip, wheat glutenin and wheat proteose; and suggestive to cocoa. These articles were omitted from the diet. It has been but one month since this test was completed, but the patient has had no attacks since that time.

I have not had as completely satisfactory results in mucous colitis, but so far they have been most suggestive, as illustrated by the following case:

Mrs. G. F., No. 6126. Diagnosis, mucous colitis. The patient was first seen in October, 1921. She had made the rounds of the doctors, and had received many diagnoses, but little or no benefit. She complained of diarrhea with intense tenesmus and the passage of large amounts of mucus in the stools, over a period of two years. She had also had considerable headache of a migrainous type.

After considerable local treatment, we tested the patient out with the various proteins, and obtained a weakly positive reaction to beet, chicken, strawberry, casein, grapefruit, turnip, wheat, cocoa, peanut, crab, celery, coffee, orange, mackerel, cabbage and banana.

One of the proteins to which she reacted more strongly was wheat. After learning of the results, the patient remarked as a curious coincidence that whenever she had had an attack of colitis her mother would place her on a "light diet," consisting of tea and toast, and her symptoms invariably increased. All the articles described were omitted from her diet, and there followed very distinct improvement, although not complete recovery, which has persisted until the present time. The patient reports that she walks a mile each day, and visits friends, without fatigue,—whereas a year ago walking one block would have so exhausted her that she could not sleep at night. She now averages nine hours' sleep every night. Her appetite is good. She has gained slowly in weight. There have been rather frequent setbacks, but the general condition has improved quite steadily.

Chicken had been omitted from the diet. Three months later she ate chicken on two occasions, and following each there developed an acute attack of colitis. The description was the same for each attack. During the first two days there were pricking pains in the bowels, and thread-like formations of mucus were passed. The bowels became increasingly irritated, until the patient finally described herself as "sick from head to foot." The two attacks lasted equal periods.

Urticaria is freqently or perhaps always a sensitization phenomenon, and the patient himself is often able to describe the article of food which brings on the eruption. But frequently no protein can be found which will react in the cutaneous test, and the sensitization appears to be due to bacteria located in some focus within the body. Removal of the infection sometimes gives relief.

Just a word as to what actually occurs when a patient is desensitized, as in the prophylactic treatment of hay fever. The explanation is, of course, entirely theoretical, but it enables us to visualize the process fairly satisfactorily. We can desensitize with small doses of pollen, increasing the amount gradually, until, when pollenation commences, the patient develops no symptoms, or, at most, has but a very mild reaction. Nevertheless, at the end of a year the whole process must be gone through again. Our "immunity" has been but temporary. We have effected no permanent change in the body tissues.

In pollenosis, the symptoms are due to the poison liberated. In prophylactic immunization, likewise, the protein poison is liberated in the tissues. The introduction then of gradually increasing quantities of protein poison induces an increased tolerance, or resistance against its action on the body cells, quite analogous to the increased tolerance developed by morphine habitues. It has been shown experimentally that "immunity" to the protein poison, as we ordinarily conceive of immunity, (antigen-antibody reaction), does not exist. But tolerance of increasing degree can be acquired by repeated injections, so that in guinea pigs, for example, the injection of three or four times the minimum lethal dose may frequently be received without fatal outcome. In desensitization, tolerance is probably not the only reaction induced. The state produced appears to be one of anti-anaphylaxis, and presumably several factors enter into the reaction.

but the others are still quite hypothetical, and for present purposes it will be simpler to consider only the state of increased tolerance.

If you were sentenced in a court of law to be given, on August 15th of this year, subcutaneously in one dose three grains of morphine, what would you do? You would start today, taking small doses, and gradually and constantly increasing the dose until you had acquired a tolerance to morphine such that on the 15th of August the administration of three grains subcutaneously would produce little or no reaction in your case. Tolerance is not permanent. Neither in the case of morphine nor in pollenosis is acquired tolerance a true immunity. No antibody has been formed. The protection cannot be passively transferred from one animal to another, as in immunity. Finally, the increased resistance is not permanent. Long before a year has elapsed the results of prophylactic inoculation have been entirely lost and, as would be the case with morphine, the entire process must be gone through again.

SUMMARY AND CONCLUSIONS.

In many diseases not usually considered as anaphylactic, the phenomena of sensitization and anaphylaxis play an important part.

The biologic reactions causing symptoms are discussed.

Asthmatic bronchitis should be clearly differentiated from bronchial asthma.

Cases are reported which indicate that migraine, mucous colitis, and vasomotor rhinitis, or rhinorrhoea, are frequently sensitization phenomena.

In desensitization, a condition of increased tolerance to the protein poison is produced, analogous to tolerance induced by increasing doses of morphine.

617 *West Grace Street.*

THE DEVELOPMENT OF PUBLIC HEALTH ACTIVITIES IN RURAL DISTRICTS.

By Surgeon W. F. DRAPER, U. S. Public Health Service.
In charge of Cooperative Rural Sanitation, State Board of Health of Virginia.

To the members of this Association from New York, Boston, and other municipalities, it may seem that health conditions of rural communities is a somewhat foreign subject. A few moments of consideration, however, will show that this is a matter which is closely related to the health and welfare of people in the cities as well as to those in the country.

Milk produced on farms where insanitary conditions exsit and the people are ignorant of the first principles of the transmission of disease is a less desirable commodity than milk produced under healthful conditions. Fruits and vegetables contaminated by seepage from an insanitary outhouse or gathered from soil which is grossly polluted by improper methods of excreta disposal may play an important role in the spread of disease among city consumers.

Automobile transportation affords a rapid means of communication between the city and the country so that the city dweller, almost before realizing it, may find himself amid rural surroundings, exposed to any unhealthful conditions which may exist.

These facts are recognized very generally by city health authorities who issue advice to their people at the beginning of every summer season to ascertain the health conditions of the places in which they are planning to spend their vacations, and to avail themselves of the protection afforded by antityphoid vaccination.

From the economic standpoint also, health conditions in the rural districts have a direct effect upon the people in the city. The efficiency of farm labor in many sections of the country is materially reduced by malaria, hookworm disease, and other readily preventable infections. The increased overhead expense caused by labor turnover and loss of time must be met by the ultimate consumer in the higher price for food and clothing.

It seems very desirable, therefore, that an Association concerned with any phase of public health work should have some knowledge of the principles underlying the development of public health activities in our rural districts.

The distinct purposes of public health work are the prevention of disease and the promotion of health. The work should be so administered that it will accomplish the maximum results with the money available for expenditure; and it is a condition precedent to the attainment of maximum results that the first consideration in any community should

*Read at meeting of American Association for Promotion of Hygiene and Public Baths, Brookline, Mass., May 10, 1921.

be to determine the particular variety of health activity which, for a given cost, will result in saving the greatest number of lives or reducing most appreciably the record of sickness.

For example, in certain districts, typhoid fever and the other filth-borne diseases are prevalent to such an extent as to constitute a real menace. It is a comparatively simple thing to control these diseases—it is merely a matter of adequate sanitation. So, under such conditions, it must be obvious that money spent in such districts for sanitation will yield greater, more rapid, and more definite returns in lives saved and sickness averted than could a like sum expended for any other purpose.

Sanitation is, therefore, the logical work to undertake as the first step. When these diseases have been brought under control, the next most important work will have to be determined; and that work must be decided by the same factors that governed the first undertaking—the saving of lives and the prevention of sickness. All developments of public health undertakings must be considered from this standpoint. This does not mean that only one activity should be undertaken at a time; if there is money available for diverse undertakings and there is a need for varied activities, health work may be ramified so extensively as to cover the widest field; but it is unwise, irrespective of funds available, to follow immaterial lines, however spectacular they may be, and ignore the important fundamentals.

Furthermore, it is almost invariably unfortunate when various health efforts in any community are conducted in a disassociated and unrelated way. Instead of harmony there is apt to be discord; instead of the proper unity of purpose, there is only too often a palpable striving on the part of one agency to do work that will gain it acclaim over another. No matter how varied the health work of a district may be, how wide the field, how ramified the sphere, all activities, valuable for the district, may be correlated if there is an acknowledged leadership, and each agency can and should work as if it were a part of a whole rather than an individual unit.

So we may assume that the matters of primary and fundamental importance are the diagnosis of the local needs and the establishment of a logical sequence for the lines of work to be undertaken. These are not problems of difficult solution; but if they were they could be solved. The public health field affords such marvelous opportunities for the development of a healthier, happier and more prosperous people, that it has attracted and is attracting not only enthusiastic supporters for the work but enthusiastic workers.

Lloyd George, lamenting the showing made by English recruits before the boards of medical examiners, declared that the health of England was of primary importance because it "is impossible to create a Class A empire out of Class C people." Our own army rejections were on a par with England's. They exhibited conditions which had been unsuspected, they forced into the forefront for intelligent consideration the problems of public health which had theretofore interested a comparatively small portion of the general public.

Now, every phase of public health activity has its advocates. All are important, and the advent of additional enthusiasts is to be welcomed; but there is, nevertheless, in this one outstanding danger, the tendency to overdevelop the more attractive and appealing lines at the expense of the less spectacular and more important branches.

I might liken the development of public health work to the growth and spread of a tree. From the ground upward each advance means the saving of lives through the prevention of sickness or the increase of vigor through the promotion of health. But the tree has branches, similar after a fashion, yet each distinct from its fellows.

Trees of the same family are not all alike. The maple of Vermont is not the maple of the Virginia hills: and, while it may live unchanged after transplantation into the southern soil for one generation, it changes its characteristics or loses its vigor when it reproduces. The problem of Massachusetts is not the problem of Minnesota and still less the problem of Louisiana.

But in one essential all trees are the same and so are all health efforts—unless the main trunk is strong, is durably rooted, is really vital, the branches will not endure, however green and vigorous they may appear. If we select the right sort of slip for planting or grow the proper seedling, nurture it, guide it, train it, fertilize it—we will have a plant

of which we may feel justifiably proud; and it will then be a matter merely of detail so to regulate the growth of the branches that the less useful may not obscure the more, and that the development shall be to the ultimate advantage of the field.

I have recently been engaged in rural sanitation work in Virginia. That Commonwealth, blessed with an unusually mild climate, is a natural home for those diseases which can only be controlled by perfect sanitation. Like the other States along the South Atlantic littoral, Virginia also has a large section of swamp area. Consequently, typhoid fever and malaria have been menaces in that State. The main efforts of the Virginia authorities have been directed toward the control or eradication of these evils.

I believe that Virginia affords an excellent example of just what is meant by the development of public health activities in logical sequence. For those counties in which no public health work has been done and in which there is but little understanding of the benefits to be derived, the State advises a single sanitary officer and, through a co-operative arrangement with the U. S. Public Health Service, supervises his work, and lends financial assistance in maintaining him.

As the results of improved sanitary conditions become apparent, opposition is allayed and sentiment for a more comprehensive plan of health work develops. A county nurse is then added to the nucleus already established. In many of our counties it is probable that the combination of sanitary officer and nurse will be all that can be supported for some time. It is a mistake to endeavor to establish new work at a rate faster than the community is ready to go. When this is done, the entire structure is liable to collapse, leaving nothing behind it.

The third step in the development of county health work is the more nearly adequate county health organization conducted on a co-operative basis with the State Board of Health and other agencies and consisting of a health officer, nurse, sanitary inspector and office assistant. With such an organization, practically every phase of public health work necessary for the average county can be conducted.

The fourth and highest stage of development in county health work is that in which the county supports its own health organization without outside assistance.

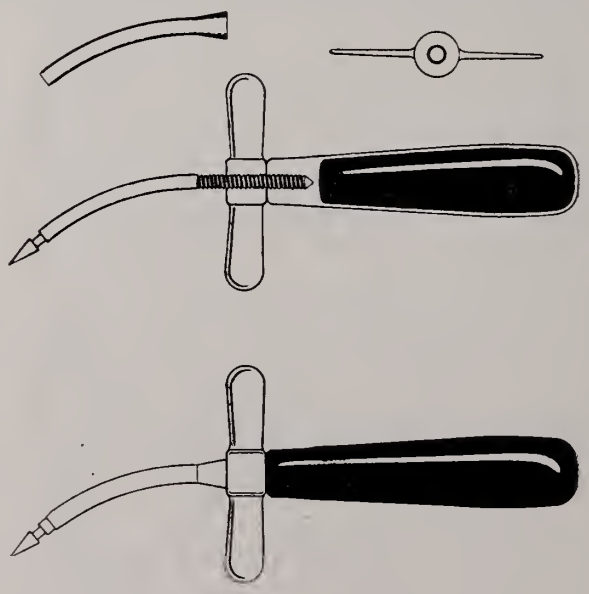
It is quite possible that certain highly specialized branches of public health work might have been introduced into these communities and have accomplished remarkable results in controlling some trouble of minor consequence while entirely overlooking and over-shadowing the less spectacular but more important work of starting at the foundation and building up. That is bad for health work; it is as if a huge oak branch were grafted upon a Norway poplar. Eventually it may kill the tree.

And so I feel justified in urging you, as I do all such groups as yours, to bend your efforts to the proper rather than the improper development of public health work, to see that each progressive step is the logical successor of those which have gone before, to the end that the structure when completed may be effective, sound, and permanent.

MAXWELL ANTRUM PUNCH.*

By G. MADISON MAXWELL, M. D., Roanoke, Va.

The increasing importance of the antrum of Highmore in its bearing on diseases of the eye, ear, nose and throat, has impelled me to try to devise an efficient and simple instru-



The Maxwell Antrum Punch.

*Demonstrated at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology in Roanoke, April 13, 1922.

ment for the drainage of the sinus. The opening made by the simple canula and trocar closes up so quickly that the patient and doctor both soon tire of the treatments; and the more or less clumsy punches make of the operation a rather pretentious affair.

The instrument here shown, which combines the canula-trocar and punch, works very nicely, and gives us a more permanent opening than the trocar alone, and is much simpler than the usual punch.

The instrument is plunged through the antrum wall just as the canula-trocar, until the small neck is reached; then the thumbscrew is turned, pushing the canula forward over the trocar, thus cutting out a small button of bone from the antrum wall.

This instrument can be gotten from The Max Wocher & Son Company, Cincinnati, Ohio.

MORAL CONDITIONS OF THE PRESENT DAY.*

By EDWIN M. MANN, M. D., Kenbridge, Va.

I desire to take a few minutes of your time to consider a subject of vital importance, one which deeply concerns the mental, physical, moral, and spiritual welfare of our State. With the the exception of our duty to our God, our moral obligations to womanhood are the most sacred of all obligations. The late war has brought a decided waking of the American people to the need of serious consideration and prompt action in facing the great problem of the day,—public and social moral principles. If the Virginia people desire to live and develop steadily into a better State, mentally, morally, physically, and spiritually, then the people of Virginia must be taught to understand the great value of certain moral principles.

This present public problem of morality is largely one of education. We are not a people that can be driven to do things blindly; there must not only be a reason, but the people must know that reason, before we can gain their intelligent cooperation with our efforts in their behalf.

The practical thinking men of the present day base their hopes of moral progress on the education of the masses as the real ground work of State health, virtue and prosperity. This embraces a consideration of the various influences operating upon society, whether for its material good or its actual deterioration, with a view of extending the former, and preventing or lessening, as far as possible, the effects of the latter. It involves the enactment of laws by which the safety of the whole may be protected against the errors of a part, and, above all, it should aim at the prevention of immorality by the removal of its avoidable causes. We must always bear in mind that public health and financial improvements in man's material surroundings will not compensate for social transgressions against the laws of morality; for public and social virtue is essential to public health and both to State prosperity. Goldsmith describes us as a land "where wealth accumulates and men decay." True or not true, it is the way that others see us.

If this State of ours was worth fighting for and dying for against German guns, then surely it is worth fighting for against any enemy that threatens our moral principles. The present deadly enemy to our State and Nation, an instrument for the destruction of our morality and virtue, has not only threatened us, but has secured a foothold in the very vitals and foundations of our State. "We can not ignore certain social customs and habits which are certainly tending to increase immorality." Among them are immodest dress, modern public dances, unchaperoned night automobile rides and the instrument that prevents conception. I am dealing mainly with the latter in my appeal to you. There has been a considerable and constant increase in the number of divorces; illegitimate births have been occurring in circles where such disgrace was formerly unknown; society workers tell us about the increasing delinquency among our younger girls. When modesty ceases to be a virtue, prostitution begins; when the standards of women are lowered, civilization is threatened and, so long as the State of Virginia fails to prohibit the making and using of instruments that prevent conception, it will drag our manhood and womanhood down into the ditch of shame and ruin. The continuation and advancement of the present conditions means the overthrow of all moral and spiritual law and order, the upheaval of our moral obligations, the production of a literal state of chaos among our people, the brutali-

*Read by title at the meeting of the Southside Virginia Medical Association, in Norfolk, June 13, 1922.,

zation of our manhood, and a collapse of our present day civilization.

The wiping out of the red-light districts has minimized commercial vice, but I can state with certainty that there is twice as much private and social prostitution as there ever was before. "The devil, the ancient tempter, driven from one line of trenches, begins his attack from another." Yes, he is in better position to reach further with his evil: he is better entrenched in secret places than in an open front and, with his present instrument of sin and his present trenches, he is better capable of destroying his opponent than ever before. Unless we can destroy his present source of supply of arms, God only knows what will be the final result.

Virtue is the most sacred jewel in Virginia's crown, yet it is the only jewel unprotected and unguarded by the strong arm of the law. Negligence of the moral principles of true womanhood, the defect in our true manhood, and the State laws unprepared to defend and safeguard the virtue of our women, involve a deep shame upon our people and State. A true motherhood and protective laws to safeguard the womanhood of the coming generations is certainly one of the fundamental principles of a good and secure government.

There are a certain class of instruments daily made by the thousands and freely distributed among our people, with no law or effort being made to stop the making or sale of the same,—an instrument intended only for the destruction of the sacredness of our motherhood, an instrument for destroying the purity and nobility of our womanhood, an instrument made to be used to ruin and overthrow the moral principles of our young manhood. For a proud race, jealous of the honor of its women, to allow the present conditions to exist, conditions that threaten the very foundation of the virtue of our women, is a disgrace to a civilized, Christian people. While the government is making a fight for the disarmament of the nation, let every true man join in the fight to disarm our people of an instrument which aids and tends toward the ruin and destruction of what is sacred in every true man's heart, the morality and honor of our women. The makers and salesmen of these instruments aim at the demoralization of our social fabric, and there is no more subtle debauchery of both mind and body than the corruption of fidelity, the seduction from purity or virtue by the use of an instrument that tends to destroy the sanctity and honor of our homes and community.

I believe that there is an awful danger at present which threatens not only the bodily and mental welfare of mankind but threatens the extermination of the American race. There are men, like the handlers of the instrument of degradation and shame, men who have foresworn all that is good and noble, who are sacrificing all moral principles for material advantage, who are behind the present conditions and, unless something is done to forestall it, it will drag our manhood and womanhood down to shame and ruin. With these instruments in the hands of our young men, they are ready to guarantee the women against motherhood and thus secure them against publicity in this sacrifice of morality and virtue.

We must organize a defense in the State by every available means, educational, remedial, and legislative, against all forms of immorality and vice. Remedial activities should be adopted that aim at securing the most wholesome social environment by the elimination of all factors which tend to weaken or destroy the home and oppose the best development of the individual. An outstanding factor is sex delinquency which results in prostitution and the dissemination of immorality.

Unless we are ourselves degenerates, who do not belong beside the four women who are nearest and dearest to us, our mother, sister, wife and daughter, sex indulgence must mean to us exactly what it would mean to us to have one of these women betrayed or misused. Just where would such an event rank in our emotions?—Would it stack up with petty larceny or murder?

We can not build a civilization on male and female prostitution; we can not build happy and confident homes on the loose sex life of our men and women before marriage; we can not satisfy our higher human nature by being chivalrous only to our sweethearts and wives as an emotional compensation for using, for selfish purposes, girls of less fortunate circumstances. Human society cannot progress half lustful and half clean, any more than the nation could survive half free and half slaves.

Deeper still, no individual can reach for himself an enduring and satisfying life, half

a debaucher of sex and half a supporter of a family. Sex and love mean the home of democratic faithfulness and happiness; these two do not mix. Virginia has not only in her principle to face morality and religion, the same spirit of imperialism that we fought in France, but she has to contend with the same breed of disloyal grafters, profiteers and slackers that would have betrayed us during the war. We must recognize that a traitor to principle and virtue is a traitor to the State wherever he is found—on the park bench or the clubhouse, in the physician or the millionaire, in the seat of the State Legislature or even in the pulpit of the church.

Virginia dare not continue to ignore the danger that is in the work of the emissaries who are seeking to weaken the moral principles and virtue of our womanhood and who, by breeding this immorality, are trying to bring about the downfall of our nation and replace the Stars and Stripes with a flag that is as foreign to our American independence as the flag of the German Kaiser himself. An effort to assist or allow immorality is nothing less than imperialism, and is antagonistic to every principle of true Virginia citizenship.

It has reached a time when we must fight for the recognition of that moral principle and virtue without which the independence won by our grandparents in 1775 will surely, like the Greek and Roman nations, perish from the face of the earth.

If our manhood and womanhood fail to check the destruction of human life by preventing disease and by upholding the character and virtue of our people, by elimination of the instrument of ruin and destruction, then shall the manhood of our beloved State, in their conscience, see the writing on the wall, "the traitor to womanhood and moral principle is most accursed."

GASTRO-INTESTINAL DISORDERS OF INFANTS.*

By RUSSELL M. COX, M. D., Portsmouth, Va.

I have been asked to discuss the subject from the standpoint of etiology, pathology and symptomatology. I believe it has been selected as a topic for discussion today, because of the appropriateness of such a subject at this particular season. That it is appropriate and beneficial for us to review this subject now cannot be doubted when one sees on every hand the prevalence of gastro-enteritis in infants. I have not come in contact with the conditions in the rural and small-town sections of Virginia but, while spending some time last week in an Eastern North Carolina town, I was asked by local physicians to see several babies who were acutely ill with such an upset, and was told by them that the rural districts were full of sick babies with gastro-enteric upsets. At this time of year it constitutes at least three-fourths of my practice. Some of the babies get dangerously ill and some of them die. What is more, it is a most difficult job to say at the beginning of these upsets which baby will be only moderately ill and which will die.

With these things in mind, I feel that every physician should stop for a moment at the beginning of the hot season and take account of stock. He should ask himself whether he is capable of differentiating the various types of diarrheas, of deciding from the symptomatology of the case and the study of the stools as to just what is the pathology of the involved bowel; and whether, having recognized these things, he is thoroughly conversant with the modern recognized methods of treatment for the various diarrheas. So I request today a moment's sober thought with me while we review the generally accepted facts about so-called "summer diarrheas." Let us stay away from a careless attitude toward these diseases. If one begins to assume the attitude that summer diarrheas are all alike, that it does no good to try to discover the cause, that no benefit is to be derived from an effort to place each upset in the classification and understand the pathology of the case, then one is next door to the rut of empirical treatment. Very soon that doctor will be prescribing the usual purgation followed by a bismuth mixture, and he will say nothing to the parent about dieting the case. It is surprising how easy it becomes to get into this rut, and is surprising how many physicians in the larger cities, where every facility for proper treatment is at hand, become careless in the treatment of these upsets in children.

I shall consider first the etiology of the group of "summer diarrheas" as a whole. There are several important predisposing fac-

*Read before the Southside Virginia Medical Association at Norfolk, June 13, 1922.

tors: most important, that of age. The greatest frequency of diarrheal diseases belongs to the first year of life: and after the second year there is a rapid decrease both in occurrence and mortality. This factor of age is easily understood if one considers the delicate structure of the mucous membrane of the digestive tract in infants, its susceptibility to injury even in the healthy infant, and how it is constantly exposed to injury, either chemical or mechanical, and to infection. Poverty, crowding, uncleanliness, chronic disorders of digestion, malnutrition, marasmus, and rickets are all especially important predisposing factors. Most striking is the prevalence of the diarrheal diseases in the heat of summer. The incidence and mortality seem directly proportional to the heat of summer. And it seems to be a certain fact that atmospheric heat itself, besides producing a higher bacterial contamination of milk, acts directly to produce the disturbances of metabolism which are followed by indigestion and diarrhea. The influence of the diet in the first year is a big etiological factor. It is estimated that less than 5% of the really severe cases of diarrhea are among the breast-fed, and fatal cases are extremely rare. Time and again we see illustrated the importance of diet. For instance, in factory towns, where the mothers go out to work and almost all babies are bottle babies, the incidence of diarrheal diseases is extremely high. And when a city has to go through labor trouble with the working class of people out of work, and consequently out of money with which to supply the best food for their children, as Portsmouth did last summer, there is always an immediate and decided increase in the incidence of diarrheal diseases.

The exciting causes of diarrheal diseases will be discussed with each type. It suffices to say here that these predisposing causes, such as heat and poor food supply, may be the actual exciting causes.

For a classification of diarrheal diseases, I shall take that of the eastern schools in preference to the classical one of Finkelstein and his followers. It is my feeling that the varieties of diarrhea are intimately related from the standpoint of pathology as well as symptomatology, "There being in all," to quote Griffith, "a functional disturbance, and in the more severe forms an organic change as well; or the latter developing in the later stages of a diarrhea which was at first only functional in nature." This authority also calls attention to the increase in bacteria content of stools in diarrheas, so that it is often impossible to determine whether the diarrhea is the direct result of the infectious influence of the germs on the mucous membrane or of their action in causing decomposition of the food and the consequent formation of toxic products; or whether the increase of germs is secondary to a simple disturbance of function of which the diarrhea is a symptom.

Let us consider the latter case first. The generally accepted term for this condition is Acute Intestinal Indigestion. Under this heading is grouped all the milder disorders where the disturbance is purely a functional one, produced in a number of ways, with very little evidence of toxic disturbance in the individual.

Etiology: The principal cause of this condition in infants is overloading of the gastro-intestinal tract; the use of a diet unsuited to the patient with an excess of protein, carbohydrate or fat; the secretion of abnormal constituents in the milk of the nursing mother from nervous or other causes; and poor digestive power of the infant because of rickets, acute infections, etc. Summer heat seems to act here as an exciting cause, especially in artificially-fed babies. Under this grouping occurs the acute upsets seen in older children from the ingestion of unripe fruit or indigestible vegetables. Here also come the so-called anaphylactic diarrheas that occur always in certain children from the ingestion of certain articles of food for which they have become sensitized. The number of bacteria in the ingested milk is relatively unimportant save for their effect in producing harmful decomposition products in the milk.

Pathology: There are no lesions in the bowel except a slight injection of the mucous membrane. There is, of course, outpouring of fluid and increased peristalsis, resulting in diarrhea.

Symptoms: The onset is usually with vomiting and in a short while fever, abdominal pain, slight prostration, and early diarrhea: although all other symptoms may be absent save for slight malaise and diarrhea. The stools in infants contain lumpy masses of undigested milk in a watery fluid, some-

time with mucus, but never blood, the color varying from light yellow to green. The number may be increased up to 20 in 24 hours, and a stool almost always occurs with the taking of food or fluid. This is the characteristic of the stool in older children, too, and frequently the particular offending article in the diet may be recognized in the stool.

Under proper treatment, the attack usually clears up in a few days, although it may go on into the next form to be considered—Acute Gastro-enteric Intoxication, the latter being simply a more severe and more toxic form of the same disturbance.

Etiology: The same predisposing causes are important factors. The actual exciting cause of the disease seems to be the effect of toxins, produced either endogenously or exogenously, and frequently from the action of bacteria on milk. This is the explanation of the occurrence of the disease in infants fed on sterilized milk. The sterilization destroys the bacteria but not the toxins already formed in the milk. In other cases bacteria foreign to the intestinal canal are found in great number in the stools, while in still others it seems probable that those normally present are abnormally increased in number and virulence. The distinguishing feature is that, while the upset may be due to the action of bacteria, it is not an actual infection of the intestinal wall, but the effect of the products formed in the canal by bacterial action. Some effort has been made to differentiate the forms of this upset according to the particular food element attacked, but to my mind this complicates the problem without aiding much in the study of it. I mention it only to bring out the fact that it is usually the lower fatty acids acting as irritants, and these, of course, are derived from the sugar and fat in the foods. A number of micro-organisms have been accused as active agents—streptococcus enteritis, bacillus dysenteriae, bacillus proteus vulgaris, and bacillus perfringens of Tissier. It is certain that no one of them is ever specific, and that no one of them, even in ileo-colitis, can produce a definite, characteristic complex of symptoms.

Pathology: The change in the stomach and intestine ranges from a very slight one to severe desquamation, according to severity of the upset. All changes are of a degenerative nature, and involve the stomach and small bowel more than the colon. Both the stomach and bowel are usually distended with gas, the mucous membrane covered with mucus, the epithelial cells pale and showing microscopically evidences of degeneration with, in the more severe cases, desquamation in patches and ulcer formation. The Peyer's patches are injected and show small-cell infiltration. Other organs in the body may show the effect of toxins, such as fatty degeneration in the liver and acute degenerative changes in the kidneys.

Symptoms: For a discussion of the symptoms it seems best to divide the subject into (1) a mild and (2) a severe form.

1. *The Mild Form*: There are usually present in infants both gastric and intestinal symptoms. The onset may be gradual, following evidences of indigestion; or sudden, with fever, combined with colic and vomiting, with diarrhea coming on in a few hours. Nervous symptoms usually appear early, as restlessness and irritability, or frequently convulsions. There may be great prostration, sunken eyes and stupor. There is loss of appetite, but always great thirst, which may cause the child to take everything offered, even though it be quickly vomited. The vomiting may be moderate and soon cease, may be entirely absent, or may be severe and very persistent. The diarrheal movements are at first fecal, with curdy masses, and may be very frequent. They later become quite liquid, with a very offensive odor, and are expelled with a lot of gas, and accompanied by colicky pains. Usually in the mild form the fever subsides with the development of diarrhea, and there is improvement in the nervous symptoms. Such a case, properly treated, gets over the gastric symptoms in 24 hours and, within 3 or 4 days, all symptoms may have disappeared save for a slight increase still in the number of stools to 3 or 4 daily. Even then an error in dieting will throw the case back quickly into the condition just described, or into the severe form. On the other hand, a case may persist as described, for several days, and gradually pass into the severe form, without ever showing any improvement.

2. *The Severe Form*: If a case develops the severe form quickly, the clinical picture is a definite one.. There is an onset exactly as described, except that nervous symptoms are more prominent. The infant looks more

toxic, vomiting is almost continuous, and a diarrhea with large watery stools more quickly appears. Very quickly the patient shows signs of loss of fluid from the body tissues, and very quickly there is evidence of acidosis. Unconsciousness with stupor or convulsions prevails. The eyes are sunken, the conjunctiva dry and pale. The skin is dry and glossy, and remains in folds over the abdomen, if picked up between the fingers. There is a peculiar high-pitched "cerebral" cry which is almost continuous, with tossing of the head, arms and legs. And in typical cases there may be an "air-hunger" breathing which is of diagnostic aid. This form is the "Alimentary Intoxication," in Finkelstein's classification, and is the form that appears typically in cases from the ingestion of milk that is high in toxins from bacterial action. The severity of the symptoms and the fatal termination have in later years been thought to be due to the high degree of acidosis present. One cannot overestimate the importance of recognizing early the presence of the dehydration and acidosis, so that proper treatment may be instituted. A great aid in the diagnosis of acidosis is the apparatus familiar to you, for estimating the carbon dioxid tension of the alveolar air. Some modifications in its use are necessary in dealing with infants. A smaller bag is necessary, and it must be fitted up with a mask that can be firmly applied over the baby's face. The successful use of the apparatus in babies depends upon its proper application over the face, and thorough emptying and refilling of the bag by the patient's respirations. Its construction is simple and its operation can be quickly and accurately carried out, with a little experience. To one not thoroughly familiar with the signs of acidosis in infants, it is a distinct aid in diagnosis. This severe form of gastro-enteric intoxication usually terminates in death in 3 or 4 days, unless the symptoms are relieved by treatment. Before leaving its consideration, it is necessary to mention one more form, that generally given the term, Cholera Infantum. The onset of this form is even more rapid, the toxaemia (for which term we should probably substitute the two terms dehydration and acidosis) most profound, and the cases usually end in death in 24 to 48 hours from the onset.

I would mention also briefly the complications of acute gastro-enteric intoxication. These are usually seen more in the mild form of the disease, as in the others the course is so rapid that there is hardly time for complications to arise. Broncho-pneumonia is fairly commonly seen. Also, otitis, urticaria and erythema are sometimes seen in infants, though more frequently in older children. We presume that they are due to the passage of foreign protein through the injured gastro-intestinal mucosa into the blood-stream. Furunculosis and multiple abscesses may occur. And a complication not infrequently seen in cases that have acidosis is a condition of tetany, the explanation being concerned with the effects of over-breathing as well as the disturbance in calcium retention.

Finally, a case may go on into the next type of diarrheal disease to be considered, that of Acute Ileo-colitis, or acute infectious diarrhea. We would group here all cases in which "The element of inflammation of the bowel wall is predominatingly present."

Etiology: The same predisposing factors previously referred to prevail here. The conditions of poor hygiene, poverty, uncleanliness and crowding are especially important factors. Likewise, failure to treat early and properly the milder disorders accounts for the great frequency of the condition among the poorer class of people. It is, however, a distinctly infectious disease, and the infective organisms may be any or all of those previously mentioned. It is only necessary to add that only one organism is capable of producing the disease primarily, the dysentery bacillus. When the disease is due to the other ones, they are acting as secondary invaders of the bowel wall.

Pathology: As already stated, the primary character of the disease is an inflammation. The lesions vary greatly in location and intensity, according to the duration and severity of the attack. The usual case shows one of three forms of lesions. (1) The acute catarrhal form, in which the mucous membrane is congested and swollen and the epithelium loosened in places. Small hemorrhages are seen on the surface of the mucous membrane with more or less extensive erosions. There is small-cell infiltration of the bowel wall, sometimes even to the muscle layer. (2) Follicular ileo-colitis, in which there is deep ulceration of the soli-

tary follicles, which extends laterally and into the bowel wall, with sometimes induration of the muscle coat. (3) Membranous ileo-colitis, in which there is a thickening, induration, and fusion of whole sections of the bowel wall, over which there is no mucous membrane. These lesions are always low down in the intestinal canal, usually in the colon. If membranous deposits become detached, there is seen deep ulceration of the bowel wall. There are also lesions in other organs, such as swelling of the mesenteric glands, broncho-pneumonia, degenerative changes in the liver, in the kidneys and in the spleen.

Symptoms: No division into types according to etiology or involved pathology is possible. One may describe a mild case and a severe case, as in the former disease. The average mild case may develop after 3 or 4 days of intestinal intoxication when the bacteria finally invade the bowel wall, when the principal symptom will be the appearance of blood and pus in the stool, and more marked tenesmus and colic with its passage. Or the onset may be sudden, when it simulates in every way those symptoms already discussed, for the first few hours. Then the stools become smaller and more frequent, there is more tenesmus and colic, and pus and blood appear. The abdomen becomes distended and tender along the large bowel. There is decided prostration and rapid loss of weight. But after 2 or 3 days the temperature subsides, the stools become larger, contain more fecal matter and less blood, and after about ten days are practically normal.

The severe cases are characterized by more frequent stools that contain only mucus and blood, and by a rapid toxaemia manifested exactly as in the intestinal intoxication. The temperature tends to be higher and to remain so, prostration and loss of weight continue, and death takes place in from 2 or 3 days to 1 or 2 weeks. Or a somewhat milder infection may make some improvement, hold it for 3 or 4 weeks and finally get worse as ulceration spreads in the bowel, or die of some disease.

Improvement in such cases is always a sign that the ulceration has not been extensive. Recovery is very slow and tedious, and relapses are quite prone to occur. The complications likely to occur are practically the same as those given in the fermentative diseases. In addition must be mentioned the probability of the development of a chronic ileo-colitis or of a case of persistent malnutrition.

Summary.

1. My part of the discussion of diarrheal diseases of infancy has been concerned with an effort at classification according to etiology, pathology and symptomatology, and an effort to stress the importance of such classification.

2. General etiological factors common to all diarrheal diseases in infancy are age, season, improper feeding, uncleanliness and crowding, and previous debilitating diseases.

3. The most mild type of diarrheal disease is acute intestinal indigestion, a purely functional disturbance, most often the result of over-feeding, characterized by short duration, slight fever, and a serous diarrhea with very little or no mucus in the stool.

4. The next type in severity is acute gastro-intestinal intoxication, with fermentation and degenerative changes in the bowel wall, but without infection; a disturbance that is both functional and organic, due to endogenous or exogenous toxins, divided as to symptoms into a mild and an acute form, according to the absence or presence of toxic symptoms due to the conditions of debydration and acidosis; differentiated from indigestion by presence of fermentation, nervous symptoms, and longer duration; severe form characterized by development of debydration and acidosis, which are grave conditions, demanding early recognition and treatment.

5. The final type is acute ileo-colitis, the group in which the elements of inflammation and infection predominate; the infecting organisms being the usual bacterial flora, but especially also the streptococcus and dysentery bacillus; the lesions being both degenerative and proliferative, with degenerative changes also in liver, spleen, and kidneys; characterized by symptoms that result from inflammation and infection, such as continued fever, rapid and prolonged loss of weight, marked tenesmus and colicky pains, and blood and pus in the stools; and with a course that may be short with improvement, or short with a fatal termination, or long drawn-out with continued fever and complicated by relapses, usually with severe toxic symptoms and very high mortality,—the type that the lay people call "Summer Complaint" and fear dreadfully.

Professional Building.

THE MANAGEMENT OF CONVERGENT STRABISMUS.*

By V. M. HICKS, M. D., Raleigh, N. C.

Time will not permit a discussion of all types of strabismus; therefore the writer has decided to concentrate on comitant or concomitant strabismus, as this is the usual type we see in practice.

Very few of us consider the serious handicap that strabismus places on a child. It plays a great part in moulding the disposition. The children soon become quite sensitive, due to the unjust mocking on the part of their playmates. There is no question about its having an effect on the mental development in a large percentage of cases. In this age when rivalry is so keen, the deformity causes a handicap that can scarcely be overcome. Therefore, if the child is to be given a fair chance, this deformity should be corrected early. We must impress upon the parents that they are the responsible parties and the child can justly hold this against them in later years. Why should they allow their fears of having the child hurt prevent them from giving it an equal chance with its playmates? They must remember that although they can overlook the deformity, others do not and will not.

Comitant strabismus is largely due to the following: High or unequal refractive errors, excessive accommodation causing excessive convergence, congenital muscle weakness or poor innervation, insertional anomalies and faulty fusion. A review of the literature on this subject shows that a great difference of opinion exists. Duane stresses the importance of excessive convergence incident to the over-activity of accommodation in overcoming refractive errors. This, no doubt, plays a great part. Davis and Wilkinson believe that faulty fusion is the chief factor, pointing out that comitant squint is a binocular rather than a monocular affection. Green stresses muscular anomalies and offers good argument in favor of this view. The many differences would lead us to believe that all are correct in certain cases, and none in all, and that each case should be studied with the idea of arriving at the pathology existing in each case.

The point upon which we are all agreed is that it is of primary importance to see the cases very early, just as soon as it is observed that a squint has developed. The public must be impressed with the importance of early examination and treatment. Most laymen and a surprisingly large number of physicians believe that squints are often overcome and they should wait until puberty before consulting the oculist. It is commonly taught that strabismus results from such petty things as a bee sting of the lid, nervousness, scares, foreign bodies striking the eye and many ridiculous reasons. These and other fallacies should be disproved and parents should be taught that if anything is to be accomplished in non-operative treatment it must be begun very early. Cures from non-operative treatment rarely occur after the age of eight.

It is important for oculists to have some definite method of procedure. I recommend that the following routine be adopted by those of us who do not have a systematic way of examining and treating these cases:

1. The history is of no little importance. If the strabismus has existed since birth, we may be sure it is due to a paralysis or paresis of the external rectus. In these cases, however, it is not uncommon to see evidences of some intra-cranial involvement, which has caused the paresis. We should also note if the deviation followed one of the acute exanthemata or any debilitating disease. If this be true, then we would believe that it is due to a paresis or that it has occurred in an eye that would have carried the error of refraction perfectly well, but for the temporary weakness of accommodation caused by the toxemia. Certainly, fusion plays no part in this type of case, which should yield to non-operative treatment. We wish to know if the squint is unilateral or alternating, constant or intermittent. If intermittent, it is likely due to a spasm of the inferior oblique. We should know if there are any cases of strabismus in the family. Strabismus is, of course, not inherited, but some of its causes are especially high and unequal refractive errors.

2. The vision should next be taken as accurately as possible. Many methods have been devised for taking the vision of children. The picture card is probably best adapted to most cases. If no amblyopia exists, we know we are dealing with an alternating strabismus or one that has developed very recently. If the vision is less than 20/200 or 1/10, very little hope can be given for relieving the poor sight. If it is secondary to the strabismus, it can be

*Read at the meeting of the Medical Society of the State of North Carolina at Winston-Salem, April, 1922.

largely overcome as in the cases reported by Johnson, in which the good eyes of adults were destroyed by accident and the amblyopic eyes rapidly developed normal vision. However, we should impress upon our patients that as long as the eye is turned it is not being used. The only hope of improving the sight in a squinting eye is to exercise the visual function. Straightening the eye tends to do this. If nothing is done, the vision will gradually grow worse, just as an arm will wither if constantly kept in a splint. It is the old principle of atrophy from disuse.

3. The muscle should next be examined. Carry the eyes into the six cardinal positions and with the screen test determine if there is any lagging of a muscle or if any muscle is over-active. Weeks advises the use of the tropometer to determine the lateral movements and thinks this is an excellent way to decide the operative procedure. The perimeter can be used with fair accuracy. Prisms may be used. With a little practise one can measure the deviation fairly accurately by having the patient look straight ahead with the good eye screened and after removing the screen note the amount the eye rotates. In this connection Duane points out that spasm of the inferior oblique often produces convergent strabismus. This spasm is generally produced by a paresis of the superior rectus of the other eye. Carefully watch the squinting eye turn in. If it has a tendency to turn up and in, the inferior oblique must be in spasm. In operating with this condition present, one must be guided by the amount of spasm. If it is marked, a tenotomy of the inferior oblique should precede the regular operative procedure; if the spasm is slight, the tenotomy of the internal rectus, which should be confined to the upper fibers of that muscle.

4. Next in order should be an examination of the media and fundus. Opacification in the cornea, lens or at any point along the visual axis may produce strabismus. Congenital, fundus defects play a similar role. The refraction of the unaffected eye generally determines whether the eye turns in or out. The examination of the media and fundus should be repeated when the pupils have been dilated.

5. Cycloplegic refraction should always be done; a manifest refraction is generally lost time. Atropine should be used for three or four days and the patient returned for the second examination. At this examination two very important things are determined:

(a) The full refractive error.

(b) Whether or not the strabismus has decreased, with the accommodation paralyzed. Retinoscopy gives us the error fairly accurately and should always be used.

This completes our investigation of the case and we should now be prepared to advise treatment and discuss the prognosis. If the vision is fair, the patient young, and the deviation decreased by the cycloplegic, the prognosis should be favorable with non-operative treatment. If the strabismus has not decreased, very little hope can be entertained for non-operative treatment.

In the vast majority of cases, regardless of how useless non-operative treatment may seem, we should try it. This correction with glasses, of course, is for both eyes, as it takes the accommodative strain from the unaffected eye and tends to decrease the amblyopia in the convergent eye. In prescribing these glasses, some oculists only partially correct the error, but it is generally believed that full correction to within one-fourth diopter yields the best results. Weber advises the further use of wafers (two to three diopters) for the near work to completely put at rest the accommodation and thus minimize the stimulation to converge. In addition to glasses, we should instruct our patients in the use of shades for the unaffected eye. Atropine should be used in the good eye, but not over a longer period than two weeks at one time. The shade should be alternated with the atropine. We should advise against the use of atropine for both eyes except for diagnostic purposes, as this would tend to produce amblyopia in both eyes. Aside from the use of glasses, atropine and shades, many methods have been devised to treat the amblyopia and promote fusion. Such instruments as amblyoscopes, stereoscopes, and the like. I have little faith in these instruments. I have never gotten results from them and I find that many of our best authorities have abandoned their use.

When shall we operate? Green's investigations into the methods employed by a large number of oculists show a wide difference of opinion. I believe there should be no age limit. Generally speaking, operations can be postponed until the age of four, the exception being in a definite uncomplicated congenital paresis. Soon after the age of four, depend-

ing on the individual, the operation can be done under local anesthesia. General anesthesia should be avoided as much as possible, because we cannot judge our results with the patient asleep. Full thirty minutes should be given to cocainizing the eye, dropping in one drop of a four per cent solution every five minutes. Just before the operation is begun, a few minims of a one-fourth per cent of cocaine, with a drop of adrenalin, are injected under the conjunctiva, over the muscle to be operated. This should be repeated when the tenotomy is done. With this anesthesia very little pain is produced. We must remember that pulling on the muscle produces considerable discomfort and this can be avoided to a large extent. As to the type of operation, many are used. The advancement was one of the first. Muller declares it to be imperfect and that it has no analogue in surgery. The advanced muscle adheres to the original insertion. The sclera is injured by the needles, and I have seen one case of atrophy of the globe following this operation. In the final result, a lump of tissue remains under the conjunctiva and the unsightly "bridle" too often occurs from shortening of the conjunctiva. These latter objections apply also to the more recently devised tucking operations. A perfect cosmetic effect is desired in all cases and I therefore employ a modified resection of the external rectus with an open partial tenotomy of the internal rectus. The external rectus is resected after the method of Reese, except the facia over the muscle is left. This will prevent the suture from splitting through the muscle. Some surgeons worry over the amount of muscle to be resected. I have never seen a permanent over-correction from a resection alone, but I have seen a few corrections by it without the tenotomy. To my mind, the tenotomy is the most important part of the surgical procedure. The pathology existing is a weak muscle on one side and a strong over-acting muscle on the other. Our problem is to strengthen the weak muscle as much as possible and to weaken the over-acting muscle as little as is necessary to straighten the eye. The older surgeons elected a free complete tenotomy, generally cutting the structures from the superior to the inferior rectus. This was simple and produced a quick result. But a large percentage of these cases developed a secondary divergent strabismus. In addition, there was a sinking of the caruncle producing a staring glassy eye. In my opinion it is poor surgery to ever do a complete tenotomy of the internal rectus except in certain adult cases, due to the part this muscle plays in convergence. A complete tenotomy of the external rectus may readily be done without fear of unfavorable results. In tenotomizing the internal rectus, the caruncle should be well dissected up and a few fibers left intact. As has already been stated, if the inferior oblique is spasmodic, all the upper fibers should be cut. The plan generally followed is to leave a few fibers above and below, cutting the central ones. If an open tenotomy is done, the remaining fibers can almost be counted. The amount of tenotomy should be determined by the result the surgeon is getting. Have the patient sit up and fix an object. If the eye is straight, no further tenotomy should be done. For alternating strabismus, both external recti should be resected and a tenotomy done on the eye that tends to converge after resections. This is usually sufficient but a tenotomy of the remaining internus may be done if necessary. Diplopia sometimes develops after the operation. This is of little moment and the patient overcomes the double vision by fusion or exclusion of the false image in a short while. If after the operation there is a tendency to over-correction, glasses should not be given for a while. If there is a tendency to under-correction, atropine and full correction should be prescribed to put at rest the accommodation and convergence.

Laymen get some very erroneous ideas about the operative procedure, so we should explain it in detail. I have seen people who express the idea that the eye is taken out and turned around. Others believe the eye is "split open." It should be explained that it is not the eyeball but the muscles attached to it to which the operation is confined. We should further explain that this operation upon adults should give a perfect cosmetic result, but does little to improve the sight.

Conclusions.

1. Lay-people should be taught that strabismus: can be cured; that children do not overcome strabismus; that if anything is to be done in the way of non-operative treatment it must be done early; that operations for the correction of the defect are nothing horrible.

2. A definite method of examination enables us to know what to do and when to change our tactics.

3. There is no age limit for operative treatment. The time to operate is when non-operative treatment has failed.

4. Resections of the external rectus with an open partial tenotomy of the internal rectus is the safest operation and yields the best cosmetic results.

DENTISTRY FROM THE VIEW-POINT OF THE NEUROLOGIST.*

By JAS. K. HALL, M. D., Richmond, Virginia.

The mouth and its adnexa have engaged the serious attention of the moralist from the beginning of recorded history. By the inspired writer the opinion has been handed down to us that the labour of a man is for his mouth, and from the same source have we the statement that a fool's mouth is his destruction. Ages ago it was known that the lips of the wise dispense knowledge, and we are told that death and life are in the power of the tongue. What a wonderful organ the mouth is! How influential has it been—although one of the smallest organs of the body—on the course of human history! From it proceedeth both blessing and cursing. Out of the heart the mouth speaketh, and we are judged and estimated and given our place in society much in accordance with the use that we make of this small cavity.

It is not to be wondered at that observant man thought much about the mouth, and that literature abounds with epigrammatic sayings that relate to this portion of the body. What varied functions it performs! What a multiplicity of duties engage it! How unceasing it is in its activities! Though the physiologist tells us it should not be so, we know that most of the oxygen that keeps the fires forever burning in our bodily furnaces finds its entrance into the system through this opening; the same cavity serves, also, as an important part of the expiratory-excretory apparatus; in it the seat of taste has its habitation, and there pleasant food makes its first happy contact with the body; by means of this cavity, so ready always for instant use, mankind is enabled to vocalize his thought and to transmit by winged words his ideas to his fellow-man.

Even the lips portray the emotional state. Drawn down at the corners in contempt, elevated in derision, or parted in a smile, they need no accompanying words to proclaim to the world the state of one's feelings.

References to the teeth are not so abundant either in sacred or in profane literature as are the references to the moveable appendages of the mouth. The importance of good teeth was apparently recognized by the early Biblical writers. Sound teeth were regarded not only as accompaniments of a sound physical condition, but their decorative value was also appreciated. In one of his songs Solomon sang: "Thy teeth are as a flock of sheep which go up from the washing, whereof every one beareth twins, and there is not one barren among them." What a wonderful thing it would be for the beauty and the health of our people if it could be said of their teeth that they are as white as washed wool!

I am unfamiliar with references in the early history of the human race even to the existence of bad teeth. One might infer that the ancient Hebrews knew nothing about decaying teeth. But people of all kinds and in all times have apparently associated good, sound teeth with health and strength and beauty and virility. The mighty animals of the lower orders are provided with powerful teeth; with the toothless states of the individual—infancy and extreme age—we unconsciously associate helplessness in mind and in body.

Until comparatively recent years it would seem that the dentist has thought of a tooth as affording a grinding surface and as adding a touch of beauty to its possessor—especially if it were a front tooth. Not the dentist alone, but even the ignorant layman, has long known that every tooth in one's head had in it somewhere at all times, latent fortunately most of the time, but potential always, about the most infernal pain mankind has ever known. But almost until yesterday neither the medical man nor the dentist has been able to look upon the tooth as an integral organic part of the body. The tooth, if it provoked trouble, was not permitted to remain in the body.

What has happened in these latter years to dignify the mouth, yea even one tooth, with so much medical and dental attention and thought? Let us see. It has long been known that certain types of malignant degeneration were peculiarly prone to attack those portions of the body in most active use. Cancer is looked for upon the lips, the tongue, in the

*Read before the Richmond Dental Society, Richmond, Va., June 1, 1922.

stomach, throughout the remainder of the alimentary tube, and in certain portions of the genital apparatus. The tendency of malignancy to appear in such tissues has long been known. Certain theories—the irritation theory, for instance—make plausible the outburst of malignant degeneration in such situations. Partly for this reason, perhaps, it has been difficult for us to think of fatal infection as lurking in a quiet, inactive, unused portion of the body. But the progress of modern medicine is measured in large degree by the attention that has been given in recent years to focal infection. Much of this infection has had its habitation in unsuspected localities—in quiet places, in functionless tissues, in useless organs or appendages;—in such places as the sinuses of the head, in the tonsils, in the gall-bladder, and in the appendix, and perhaps in pockets along the lower alimentary canal. How much medical thought now-a-days is centered upon these quiet places in an effort to discover hidden assassins of health and of life itself!

Only yesterday, it would seem, has it been possible for medical men, dentists or physicians, to think of serious infection as having lodgment in or about a tooth. Intimation of such a possibility by even so great a man as Benjamin Rush made no lasting impression upon physicians and dentists. He lived during our own Revolutionary period, and in that distant day he claimed to have cured completely a painful rheumatic hip-joint affection by the extraction of one diseased molar, but the medical value of his suggestion was evidently lost.

Irritability, or responsiveness to a stimulus, is one of the inherent properties of living matter. Sometimes the response is pleasant, almost as often perhaps, it is unpleasant. But the reaction is there, whether it be hidden or whether it be manifest, whether the tissue be bone, or muscle, or cabbage, or skin, or grass, or a neuron. If a portion of the active principle of a vegetable substance—hyoscyamus, for instance—weighing only the one-hundredth part of a grain of wheat, be sufficient to lull to sleep the nervous mechanism of a powerful man wild in mania; if one-half a grain of another powder—morphia—be sufficient either when placed in the alimentary tube or lodged under the skin, to relieve through its effect on the central nervous system the torture of a kidney colic, why, then, is it difficult to believe that the potency of a distillation set up by tetanic bacilli in a nail-puncture in the bottom of the foot is sufficient to clamp the jaws in rigid closure and to lock the muscles of respiration in fatal immovability?

Ten years ago, perhaps, a man came to me in the grip of chronic alcoholism. Life had become unsatisfactory, void and empty of any pleasure, so he said, and daily a pint of whiskey kept him benumbed to the point that he could endure living. Poor dentist that I was, it was not difficult even for me to discover that every tooth in his head was floating in wobbly fashion in a sea of pus. I could not induce him to go to a dentist, and soon after his return home he invited a bullet to make a fatal pathway through his brain. I have no doubt that long-standing oral sepsis drove him first to drink and later to terminate his life. Just before our entrance into the great war, a young man came from a distant state seeking relief from morphine addiction. A nagging, persistent facial neuralgia had driven him to the use of the drug. A member of your profession located a malplaced unerupted wisdom tooth; extracted it; the young man regained his health; joined the colors, and did his part in helping to drive the German army back to its final home. Under my care at present is a young man barely out of school, who is brought down frequently in epileptiform seizures. Just before the first attack laid hold of him an upper molar, capped with pus, was removed, but the infection had already invaded the antrum, and the urine was also pus-laden—and it still is—and the seizures persist. Little is known about so-called epilepsy, but the conclusion is hard to escape that a long-concealed abscess at the root of one tooth has had much to do in making possible this young man's present unhappy state of health.

The mental and the nervous disorders directly attributable to infection—much of it hidden for years in the mouth—are in numbers almost like the sands of the sea shore. I think of the manias and the comatose conditions associated with kidney disease, much of which must ultimately spring from a focus of infection in the mouth and about the teeth. And I think, too, of migrain; the various neuralgias; neuritis of various types, but almost always of toxic origin; sciatica, headache; the spinal cord changes in pernicious anaemia; prob-

ably those also in multiple sclerosis. And I think, too, of certain types of meningitis as springing from a concealed focus of infection —a focus found not infrequently in the mouth and sometimes about the teeth. We must remember that oral sepsis—peridental infection often—may serve as the real point of origin of appendicitis, gall-bladder infection, joint involvement, kidney inflammation, and, indeed, as liberating the toxic substance to which there may be reaction in any portion of the body. We must remember, too, that, regardless of its nature, cause, or location, infection makes itself felt almost always in the nervous system, and some type of neurological or mental reaction is almost always a concomitant of infection. What is toothache, pray, if not a neuritis of the terminals of certain sensory nerves?

Confession must be made, of course, that the mouth is the most unsanitary portion of the human body. Especially through the medium of food, drink, the fingers, and other foreign bodies, the mouth comes into intimate contact with a large part of the world. It must be filled always with germs of various kinds. Is it to be wondered at that many of these organisms find their way down through decaying teeth and down around good teeth, into a quiet resting place, where they can multiply and distil their poisons without fear of molestation?

The dentist, as in the olden days, is no longer a special sort of mechanic. He has become a professional man—a medical man, indeed, whose work is confined largely within the mouth,—but the scope of whose knowledge must embrace the anatomy and the physiology of the entire body. The importance and the dignity and the necessity of dental examinations and dental work are making the medical man more and more attentive to conditions within the mouth, and the far-reaching effects of dental neglect are making the dentist more and more a physician. Let it so be.

Neither destruction nor removal of an organ —even a tooth—is the highest aim of medicine. Health implies the harmonious functioning of all the component units of the body. And it is the duty of the dentist and the physician to combine their skill in an effort to obtain from the gods for each individual a favorable response to the ancient prayer of Juvenal—A sound mind in a sound body.

Westbrook Sanatorium.

REPORT OF TWO CASES OF SYPHILIS OF THE EIGHTH NERVE AND INNER EAR.*

By E. G. GILL, M. D., Roanoke, Va.

Case No. 1.—Patient J. B., age 27, came in to see me February 21, 1921, and gave the following history:

"The sixth of ten children born to my parents. Two sisters died in infancy. One brother died, age 21 years, of heart trouble. One brother died, age 29 years, of influenza. My father died of heart trouble at 69 years of age. My mother, sister and remaining brothers are living and well. I started to school when 6 years old and in about two years my eyes began to give me trouble. My father brought me to Roanoke to an eye specialist. He said my trouble was iritis. My next trouble was in 1911, when I was 18 years old. My left eye became inflamed and after a couple of months, during which time I did not see a doctor, the sight became affected. Finally, in the fall of 1911, I went to another specialist. He treated me for some two or three months, during which time my sight became very bad in both eyes. About January, 1912, he told me I had syphilis and, knowing that I had not acquired it and not knowing that I could inherit it, I became insulted and left the specialist. At that time may sight was about gone and I could not walk across a street without being led. So, on February 15, 1912, my brother took me to Richmond and placed me under the care of an eye specialist. He treated my eyes and gave me medicine, but did not say I had syphilis. In about three weeks, my sight began to get better and, during the summer of 1912, I made several trips, alone, to Richmond for treatment. My treatments were concluded in the fall of 1912. My sight is now about as when he finished with me. I can see very well with my left eye but cannot see this writing with my right eye. Then, in 1913, my hearing began to get bad, so I went to another specialist. He treated me by blowing air into my ears, without any results. He finally convinced me that I had syphilis, so in that year I began taking "606" treatments. I cannot say how many "606" treatments I have had since then, but it is around about twenty-five. I know of more than twenty, but don't think it was as many as thirty. Finally, in two or three years, during which time my

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology in Roanoke, April 13, 1922.

hearing had become very bad, I was persuaded to go back to the specialist at whom I had gotten insulted. So he treated me once or twice each week by blowing air into my ears but my hearing continued to get worse. (For three or four years I have not heard any one talking). In February, 1918, I went to Hot Springs, Ark., where I took a full course of the baths, and also had my back rubbed with mercury daily, but my hearing did not improve. I continued going to the specialist, although without any results. I also continued the "606" treatments until in January, 1920, I got my first and only negative report on my blood test. Since then I have not had any more tests nor any more "606." I don't know how my blood would show today, as I have never gotten nerve to have another test. About four years ago I began to have a lot of trouble in my walking. Several doctors diagnosed it as locomotor ataxia. I was treated for it for some time, by a physician and, while it is not eradicated, yet I walk lots better than I did." These are the patient's exact words.

The results of my examination are as follows:

Nose.—Septum deviated to right side.

Throat.—Tonsils enlarged and diseased.

Ears.—Right ear drum membrane slightly retracted, otherwise normal. Left drum normal, Eustachian tubes patent.

Sinuses.—All clear to transillumination.

Functional Examination of Hearing.—All tests negative. Absolute deafness.

Vestibular Examination.—Dizziness. At times.

Staggering. At times.

Romberg. None.

Tinnitus. None.

Deafness. Absolute.

Spontaneous Test.—Nystagmus looking to right. None.

Nystagmus looking to left. None.

Pointing shoulder from above. None.

Pointing shoulder from below. None.

Pointing shoulder from side. None.

Turning Test.—Nystagmus to right. None.

Nystagmus to left. None.

Pointing shoulder from above. None.

Pointing shoulder from below. None.

Caloric Test (Cold).—Nystagmus douche, right. None.

Nystagmus douche, left. None.

Pointing right shoulder. None.

Pointing left shoulder. None.

Case No. 2.—Patient G. G., age 26, came in to see me February 5, 1921, and gave the following history:

"For the past seven years has been deaf in right ear. Deafness came on gradually over a period of two months. During this time he was treated by catheter inflation for one month with no results. Last night he became suddenly deaf in his left ear. No family history of deafness."

The results of my examination are as follows:

Ears.—Left ear drum all right. Right ear drum all right.

Tonsils.—Tonsils diseased.

Nose.—Septum slightly deflected to left side.

Sinuses.—All clear to transillumination.

Functional Examination of Hearing.—Negative. Absolute deafness.

Vestibular Examination.—Dizziness. None.

Staggering. None.

Falling. None.

Romberg. None.

Tinnitus. Yes.

Spontaneous Test.—Nystagmus looking to right. None.

Nystagmus looking to left. None.

Pointing shoulder from above. None.

Pointing shoulder from below. None.

Pointing shoulder from side. None.

Turning Test.—Nystagmus to right. None.

Nystagmus to left. None.

Pointing right shoulder from above. None.

Pointing left shoulder from above. None.

Caloric Test (Cold).—Nystagmus douche right. None.

Nystagmus douche left. None.

Pointing right shoulder. None.

Pointing left shoulder. None.

In case Number 2, the vision is twenty-thirtieths O. U., four two-hundredths O. D., and twenty-thirtieths O. S. Fundus examination, O. D. Disseminated choroiditis retinitis, involving the maculae. O. S. small areas of chorea retinitis. This picture of a dead auditory apparatus and a failure of any of the semi-circular canals to produce responses shows beyond all doubt that the labyrinth or eighth nerve is destroyed.

Case Number 1, as shown in the history, had a positive Wassermann reaction; case Number 2 had a negative Wassermann and negative spinal fluid. In all cases of suspected syphilis

of the eighth nerve, particularly those with negative Wassermann should have a careful examination of the eye grounds. The eye condition in the second case was a great aid in clarifying the diagnosis.

The history of these cases clearly indicates the extreme importance of a careful functional and vestibular examination of every case of deafness before resorting to any local treatment, as both patients had been treated by various means for middle ear conditions. One point of particular interest in these cases is that they both have lost the function of their labyrinths, yet they maintain almost perfect equilibrium. This is due to compensation on the part of the muscle and sight sense. If any benefit is to be derived from treatment in these cases, the diagnosis must be made early.

612 *MacBain Building.*

SOME MODERN VIEWS OF CANCERS*

By CHARLES MINOR BLACKFORD, M. D., Staunton, Va.

It is needless to go into the morbid histology or the pathological classification of the malignant tumors before this audience. It will suffice to say that in this paper the word "cancer" will be used to include tumors of the epithelial group, the carcinomata, and those of the connective tissue group, the sarcomata, and that when any statement is made which applies only to some specific tumor, it will be made clear that such is the case.

All of us are familiar with the anatomical features of these mysterious growths, and all of us are familiar with the fact that at the present state of our knowledge, there is but one effective mode of treatment, which is the early and complete removal or destruction of the neoplasm. Of course this implies an early diagnosis of the cancer, but this in turn requires a degree of co-operation on the part of the patient which is rarely found. Almost every surgeon in wide practice can duplicate from his own experience the well known story of the woman who presented herself for treatment with a well developed cancer of the breast, and who, when the surgeon asked her if she had not noticed the tumor in its earlier stages, answered that she had noticed it but was afraid to show it to the surgeon for fear that he would pronounce it cancer! This is the attitude of many sufferers who consider the presence of a malignant tumor as a certain forerunner of death, and who prefer to deceive themselves into the belief that the tumor is harmless until the time for its cure has passed forever.

There are some points in regard to cancer which every physician should keep in mind, and one of the most important of these is the frequency of the affection. According to the latest report of the United States Census Bureau, one death in ten, after the age of forty years, is due to cancer, and this ratio is apparently increasing throughout the world, or, at least, throughout that portion of it from which we can get fairly reliable statistics. During the two and a half years in which the United States was engaged in the recent war, about 80,000 soldiers were killed or died in the service, but during the same period some 180,000 persons died from cancer in this country. By the figures of the United State Census Bureau for 1917, cancer ranks with pneumonia, tuberculosis and the various forms of kidney disease as being second only to heart diseases as a cause of death, and its mortality rate is a little below eighty-five per 100,000 a year, a rate which increases approximately two and one-half per cent per annum.

In spite of the frequency of cancer, the ordinary practising physician is rarely on the look-out for these affections among his patients, and the tumors are apt to get well under way before they are diagnosed. Probably one reason for this apparent negligence is the fact that we know practically nothing of the cause or causes of these malignant growths. So far, microscopic examination of the growths has shed no light on the causes of the two typical cancers. One of these is composed of epithelium cells and the other is made up of connective tissue cells, but there is nothing in either of these tissues which should be fatal or even injurious to the organism. Most of the body is made up of epithelium or connective tissue, and the most important functions are performed by organs composed of both of these kinds of cells. If the cells of which the cancers are composed were in themselves pernicious, no organisms would be able to live but, although these cells are of vital importance while they are functionating properly, they seem to become vicious in the extreme when they go astray and become cancers. So far,

*Read before the Augusta County Medical Association, Inc., on May 3, 1922.

no micro-organism has been found to which the cancers may be attributed. The most careful cultures have remained negative, and the most scrupulous observations on the part of the most skilled pathologists have failed to reveal any specific cause. It is true that a degree of immunity of grafted cancers may be induced in mice by injecting a quantity of homologous living tissue a week or ten days before grafting them with cancer tissue:* this is called induced immunity, and it is also true that a certain number of mice prove resistant when inoculated with a transplantable tumor; a condition known as natural immunity. Both of these forms of immunity seem to depend on a lymphoid infiltration of the tissues around the graft and, later, on a direct invasion of the grafted tumor by the lymphoid elements.

That the immunity so obtained is dependent on the lymphocytes surrounding the grafted cancer tissue was absolutely demonstrated by the fact that, if these lymphocytes be destroyed, the immunity disappears. In the paper quoted above, Murphy says that there was an actual increase in the circulating lymphocytes, accompanied by a hyperplasia of the lymphoid elements, following cancer inoculation into immune animals, and that if this increase be prevented by the destruction of the lymphocytes, the induced immunity is lost. Furthermore, if naturally immune animals have the lymphocytes destroyed, they become susceptible to inoculation. The destruction of the lymphocytes was affected by small repeated doses of the X-ray, and in the course of the experiments along this line it was found that, while small repeated doses or a single large dose of the X-ray would destroy the lymphocytes, a single small exposure to a ray of suitable quality would stimulate them. From these experiments it seems that the X-ray in the hands of an unskilled operator may do as much or more harm than good.

Between the ages of 35 and 45, three times as many American women die from cancer as do American men, and between the ages of 45 and 55 the female mortality is twice that of the male. Generally speaking, the excessive mortality among women is due to cancer of the breast and generative organs.* Among white women cancer is most common in the breast, but among negro women the uterus is the most common site. There is, however, no tissue in the body in which cancer may not arise, and it is a peculiar fact that the cells of which the cancer is composed are always similar to those of the tissue in which it originates. Cancer of the breast, for instance, may be carried by the blood current to some more or less distant part of the body and there set up a metastatic growth, but this growth will be composed of breast cells, apparently normal cells which have "gone wild."†

Since the present state of our knowledge leads us to think that cancers are not caused by micro-organisms, it may be of some use to consider the conditions which are apt to be followed by a cancerous growth. Abnormalities on the skin, such as pigmented moles, have long been recognized as the starting places for melanosarcomata; chronic ulcers, fissures of the skin and constantly irritated burns, whether the burns be caused by heat, X-rays, radium, caustic chemicals, or what not, are apt to be followed by cancerous growths. The natives of Kashmir have the custom of carrying a metal box containing burning charcoal, the so-called "Kangri" basket, under their clothes and next to the skin of the abdomen and, as a result of this constant skin irritation, the "Kangri" cancer is well nigh universal among them. The presence of gall stones which keep up a constant irritation of the gall-bladder, and a certain proportion of ulcers of the stomach, are apt to be followed by cancer. The senile keratoses or patches of heaped up squamous epithelium, so common on the faces and bodies of elderly persons, are among the most frequent starting places of skin cancers and any other condition which results in a chronic irritation of a tissue is liable to be followed by a cancer at the seat of the irritation. Of course, cancer does not invariably follow a chronic irritation, and so there must be some other factor of which we are ignorant: but, unquestionably, chronic irritation is the most common preparatory condition.

Among these sources of chronic irritation

*James B. Murphy. "The Effect of Physical Agents on the Resistance of Mice to Cancer," a paper read before the National Academy of Science on November 10, 1919, and published in the Proceedings of the Academy, January, 1920.

*"Fighting Cancer with Facts." Revised April, 1921, and published by The American Society for the Control of Cancer, 370 Seventh Avenue, New York.

†Lilienthal, Howard. "Lecture No. 1." Published by The American Society for the Control of Cancer, 370 Seventh Avenue, New York.

body lice and intestinal worms must be taken into account. Of recent years we have learned that malaria, yellow fever, the sleeping sickness and a number of other diseases are transmitted by biting parasites whose effect is more or less like that of a dirty hypodermic needle, and this fact has led to the investigation of the influence that such parasites may have in producing cancers in their hosts. Millard C. Marsh,* of the New York State Institute for the Study of Malignant Disease, Buffalo, N. Y., working alone and in conjunction with Dr. G. Wulker, of the Institute for Cancer Research in Heidelberg, made some interesting investigations on the effects of the common mites which infest more or less the skin surface of all adult mice. He found that these mites, which are so small as to require some magnification for their recognition, are sometimes found subcutaneously, although dead and often disintegrated, in tumor mice and in other old mice, though they are rarely so found in young mice. This fact led him to try a series of experiments to determine if these mites are the bearers of some agent which causes the tumors, or if they are merely the instrument of injuries which act as stimuli. More than 1,100 mice were used in over sixty experiments in irritation and trauma, and most of the experiments were negative, but the general result seems to eliminate the introduction of any pathogenic micro-organism and to point to traumatism as the cause of the tumors, though, as Marsh says, "Incidentally, one may further infer that the effective factor hidden in any mechanical procedure which appears to start tumors is a very subtile one, and that its isolation or identification is a very difficult task."

Unhappily, our ignorance of the cause of cancer is matched by our ignorance of the manner in which it produces its deleterious results. As stated above, a cancer appears to be a mass of normal cells which have "gone wild" or are developing in a "lawless" manner, but language of this sort is purely figurative and does not express any accurate or scientific condition. From the fact that some animals seem to be immune to grafted cancers while others are very susceptible to them, some anti-cancerous agency must exist in the organism, but so far as is at present known, this resistance is associated absolutely with the accumulation of lymphyocytes about the spot where the cancer grafts are made. There seems to be nothing parallel to the action of the ordinary anti-toxines which are so efficient in the ordinary bacterial diseases. Cancer is not self-limiting; it does not run a course and stop. It does not, therefore, develop any anti-body. The rapid growth of the neoplasm makes a serious drain on the nutrition of the body, and the degeneration to which the tumor tissues are liable is apt to furnish toxines of great virulence which poison the patient. These degenerative processes lead to the disintegration of the original tumor and masses of the tumor cells are carried to some other part of the body, where they set up metastatic growths. It has been suggested that the cancers, and especially the epitheliomata, may act as glands and secrete some product which is deleterious to the body as a whole but, as yet, this suggestion has not been supported by chemical or other evidence.

It is evident that with the limited knowledge as yet gained about the cancers, the only hope of a cure is the total removal or destruction of the malignant growth. If a cancer can be diagnosed in its earlier stages and is so located as to be operable, it can be cured by ordinary surgical procedure, provided that the morbid tissue be thoroughly removed, but in the latter stages of its growth or if it be inoperable, some other means must be sought. Caustic pastes by which the morbid tissue was to be destroyed by chemical action were at one time in great favor, and these pastes, mostly with some preparation of arsenic as the active agent, are still the mainstay of most of the quack "cancer cures." The beneficial value of these agents is less than doubtful while their injurious effects are evident, not only by inducing the patient to postpone treatment which might be useful, but by producing an irritation which is apt to stimulate the morbid growth. Burning out the cancer with the actual cautery has fallen into almost total disuse.

As soon as the X-ray and the peculiar properties of radium were discovered, they were employed on cancers. The effect of the X-rays has been the subject of extensive investigation in the laboratories of the Rockefeller Institute, for very early in the history of these agencies the theory that cancer tissue in gen-

*Marsh, M. C. Trauma and Primary Mouse Tumors. The Journal of Cancer Research Volume II, No. 3, July, 1917.
Marsh, M. C. and Wulker, Dr. G. Ueber das Vorkommen von Nematoden und Milben in Normalen und Spontantumormausen. Zeitschrift fur Krebsforschung. Berlin, August, 1916.

eral is more susceptible to injury by the X-rays than is normal tissue, became widely accepted "So far as we have been able to determine from the literature there have been no conclusive proofs brought forward that this theory is correct. Cancer cells can undoubtedly be killed by X-rays, but judging from our experiments the amount of X-rays which can safely be given man without causing burns and other deleterious effects, is not sufficient to kill the cancer *in vitro*."* Further on in the article from which this quotation is taken, the same writers say that the X-rays have given almost uniformly beneficial effects in but one type of malignant disease in human beings, namely, skin cancer, particularly of the basal cell epithelioma type. They say that when a cancer graft is exposed *in vitro* to X-rays, the destruction of the cancer cells requires an amount of the rays which is not comparable to the amount that can safely be given to a living animal, and that if only such an amount be used as may safely be given a living animal, no effect is produced on the vitality of the graft. The fact that small doses of the X-rays will stimulate the production of lymphocytes and so limit the growth of the cancer, seems, with the light now before us, to be the only benefit given by this agent, and much more research and discovery is necessary before we can say that we have a reliable curative agent for this horrible affliction.

*Studies on X-ray Effects. VI. Effect of the Cellular Reaction Induced by X-rays on Cancer Grafts. By James B. Murphy, M. D., Raymond G. Hussey, M. D., Waro Nakahara, Ph. D., and Ernest Sturm. From the Laboratories of the Rockefeller Institute for Medical Research. Published in The Journal of Experimental Medicine, March 1, 1921; Vol. lii, No. 3, pp. 299-313.

UNUSUAL APPEARANCE OF A BULLET WOUND.

By JAMES M. WHITFIELD, M. D., Richmond, Va.
Coroner of Richmond.

The following report of a case of suicide which occurred in this City is submitted because it contains some special features which it is hoped will be helpful as well as interesting.

Mr. Y., aged about 40 years, came to a hotel in this City late in the afternoon on May 21. After talking to acquaintances in the hotel office, he went to his room about 8 P. M. About 11:55 P. M., two sounds were heard in his room—the first, that of a pistol shot, the other that of a falling body. The clerk forced open the door which was locked on the inside, and Mr. Y's. body was found lying on the floor giving no evidence of life.

When viewed by the Coroner it was lying on the floor of the room, face down, head toward the door, in a narrow space between the bed and the wall of the room; the lower limbs and the left arm fully extended downward, the right arm flexed under the body. It was fully dressed except that the coat had been removed before the shooting.

There was a quantity of blood and some brain matter on the floor about the head. Near the head on the floor, was a small pile of plaster which had fallen from what appeared to be a freshly made bullet hole in the ceiling of the room. Lying on the floor near the left foot was a pistol containing one empty and four loaded shells.

From the position of the body and the conditions surrounding it, it appeared that Y. had shot himself with his right hand while seated on the edge of the bed, then dropped the pistol, stood up and fallen forward—or that he had shot himself while standing.

The examination of the head revealed a wound on the right side, in the hair, beginning about 3 inches above the root of the ear, extending upward, backward and to the left. The lower end of the wound was a slit as though made by a cutting instrument; the upper and posterior end was irregular and with ragged edges. The hair was burned all around the wound; the skin was burned below and about the lower end and sides of the wound; no powder grains embedded in the skin were seen. Under the scalp wound was a hole in the skull about ¾ of an inch in diameter, on the edge of which was stuck a small piece of the lead bullet.

This question now arose:—How could one bullet make only one wound in the scalp, on the right side of the head, break a hole in the skull, and then make a hole in the ceiling on the victim's left side?

A careful examination of the wound disclosed that what was supposed to be one was really two wounds, the anterior and lower slit-shaped wound being separated from the posterior and upper irregularly shaped opening by a narrow band of skin, not more than ⅛ inch wide. This latter must have been the wound of exit through which passed a portion of the bullet which had been split into at least three pieces by the edge of the hole

in the skull—one of these pieces going through the skull into the brain, one lodging in the edge of the bone, and the third piece passing out through the scalp and up into the ceiling.

A very important peculiarity of the exit wound in this case was the singed hair around it. The hair about such a wound is burned by the flame from the muzzle of the pistol and is said to be found only around the wound of entrance. In this case the missle entered and came out inside the burned area—demonstrating that, whatever may be said to the contrary, it is possible for the exit wound to present burned hair on the edges.

This knowledge may prove very advantageous to a physician on the witness stand who is being rigorously cross-examined by a persistent and astute lawyer.

1109 *East Broad Street.*

SUCCESSFUL HETEROGENOUS TESTICULAR TRANSPLANTATION IN MAN.

By MAX THOREK, M. D., Chicago, Ill.
Surgeon-in-Chief, American Hospital Chicago.

The literature of testicular transplantation shows that attempts to graft free testicles in man have not generally met with success. As with all other attempts at free grafting the difficulty has been to obtain vascularization. If such a testicular graft can be made to "take" and become vascularized there is but little doubt from the findings of experimental investigations that the graft will function and produce its peculiar hormonic effects, viz: The betterment and maintenance of male physical and sexual characters and stimulation of sexual desire.

The brilliant animal experiments of Voronoff of Paris, which were published in 1919, and supported by histological findings, proved that transplantation of testicular tissue from young to old animals of the same species was followed by vitality of the graft and that such implantation of a free graft could be expected to be followed by clinically demonstrable renewal of physical and sexual vigor and sexual impulses which had become lost or impaired.

In man the attempts at testicular transplantation having for their object the renewal of physical and sexual well-being have been comparatively few and only partly successful.

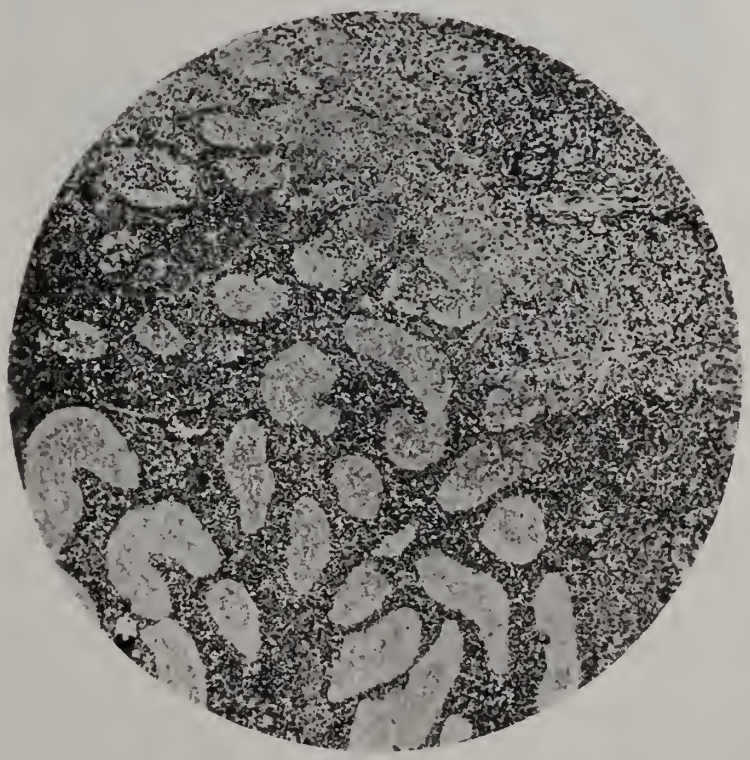


Fig. No. 1 Photomicrograph. Transplant of testis of higher ape into human. Author's technique. Magnification 60 diameters Observe regression of tubuli seminiferi, proliferation of interstitium and vascularization. Removed four months after transplanatation.

In many cases the graft was expelled or became absorbed. Only in very few cases was it verified by histological investigation that the graft lived.

There was no doubt, however, that in most cases the graft as long as it functioned did effectually promote the physical and sexual well-being of the patient in whom such a transplantation was made. It was clear to me, therefore, that if some practical method could be found by which the taking of a testicular graft could be assured, there could be but little doubt that it could be counted upon to restore lost physical and sexual capacity by the effects of its particular hormone on the whole organism.

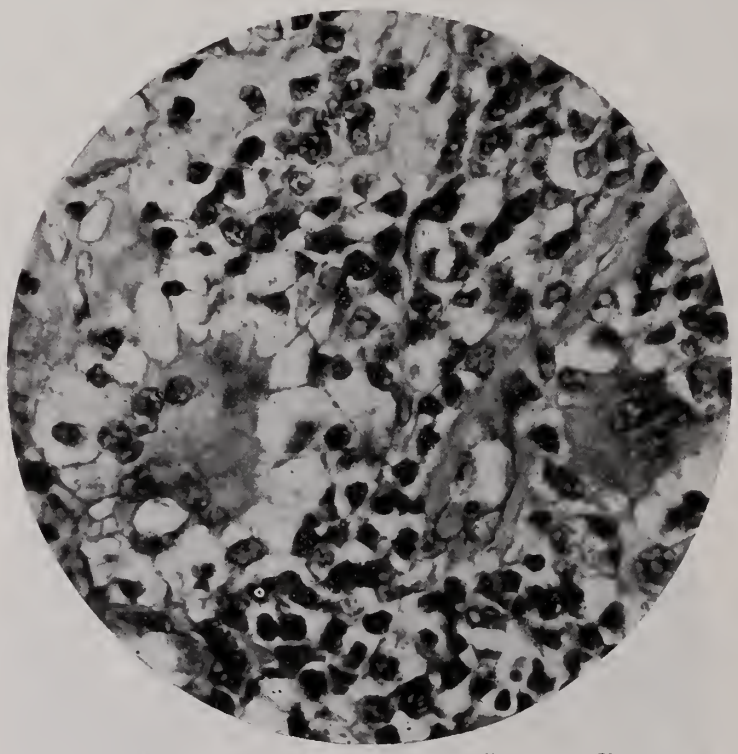


Fig. No. 2. Same. Magnification 560 diameters. Observe Leydig cells, giant cells and abundance of cell life in well nourished area.

From study of the literature of the subject, and especially after visiting the Clinics of Voronoff in Paris and Steinach in Vienna, I became convinced that testicular transplantation could become a matter of practical surgery.

The difficulty of obtaining vascularization could, I believed, be overcome by a suitable method of implanting the graft and selection of a better site for it than those usually adopted. The great difficulty, however, lay in obtaining suitable material for grafting. That human testicular tissue, if young and obtained from a subject free from disease, was the ideal material there could be no doubt, but such material was manifestly for very obvious reasons difficult to obtain. The next best thing was to obtain material from animals of the nearest biological approach to man, although the results from animals to man did not hold out hope for much success.

By a series of experimental investigations carried out during some years, I have devised a new technique in treating and implanting the graft which I call the "lantern" method of testicular transplantation and which has given me most satisfactory results, as regards the taking and vascularization of the graft.

I have also succeeded in successfully transplanting testicles from the higher apes to man and have obtained clinical and histological results which are in every respect analogous to the best results previously obtained in transplantation of human testicles.

Such testicles transplanted from apes have been removed from the human hosts after several months and are histologically proved to be living, well vascularized, and with full

activity of the interstitial glandular tissue. This, as far as I know, is the first time that such a result in a transplant from ape to man has been histologically verified. The accompanying illustration is the reproduction of the microscopic examination of a section from a testicle removed several months after transplantation. It shows regression of the seminiferous tubules, proliferation of the interstitial elements, and vascularization.

I have made a large number of such transplantations from ape to man; and, in the cases in which I have employed my improved lantern technique, I have almost invariably obtained excellent results. The full details of my surgical method and clinical findings in all these cases will form the subject of a later complete report, as I am at present only in a position to state the preliminary facts.

SYPHILIS OF THE LUNG WITH REPORT OF A CASE*

By ALLEN T. HAWTHORNE, M. D., Harrisonburg, Va.

Syphilis of the lung is a rare condition in comparison with some of the more common diseases of the lung, but it is not as extremely rare as some would have us believe. In recent years many cases have been reported, and many more could have been, had they not been overlooked. Therefore, it is not because of the supposed rarity of this condition that I have selected it as the subject for my paper, but because of the fact that it is a condition overlooked or else diagnosed as pulmonary tuberculosis. If my paper serves to bring these facts clearly before you, then the time consumed in its preparation will be considered well spent.

I shall not attempt to review the literature on this subject, because to do so would only serve to increase the subject matter of my paper without materially adding to its value.

It is with pulmonary tuberculosis that we are most liable to confuse pulmonary lues. But if our cases are carefully worked up, constantly keeping in mind the possibility of both conditions, there need be but few mistakes. I do not think that a diagnosis of syphilis of the lungs should ever be made until we have ruled out tuberculosis. In this connection, it is well to remember that in many cases the two conditions may be present in the same individual at one and the same time. Syphilis of the lungs may be assumed to be present when tuberculosis is excluded, and the patient has elsewhere the signs of syphilitic infection, or a positive Wassermann. You will note that I say "assumed"—not proven. But as I shall bring out more clearly elsewhere, we must not give too much weight to a negative Wassermann.

There are certain fundamental factors which aid us in the diagnosis of pulmonary lues, and its differentiation from tuberculosis.

1. History.—A carefully elicited history will in many cases give us the clue to the diagnosis. The family history is second only in importance to the patient's own history, both past, and that dealing with the present illness.

2. Onset.—The onset of pulmonary lues is, if such a thing be possible, often even more insidious and latent than that of incipient tuberculosis. And here, as in tuberculosis, if we wish to get the best results, we should get the disease in its incipiency.

3. Condition of the Patient.—It is striking how well a patient will appear to be when suffering from syphilis of the lung, as compared to a patient having the same amount of pulmonary involvement of a tubercular nature. Observation of this fact alone may often aid us in reaching a correct diagnosis.

4. Fever.—Pyrexia is the rule in pulmonary lues—the fever usually being highest in the evening as in tuberculosis. However, the fever is not near so constant in lues as in tuberculosis. Oftentimes it may simulate the temperature range seen in a septic infection. The fever in pulmonary syphilis yields promptly to the iodides, while, as you know, pulmonary tuberculosis is aggravated by the administration of iodides. Any fever continued over a long period of time, with little deterioration of health, should awaken suspicion as to the probability of syphilis being present.

5. Cough and Hemoptysis.—Cough is present as in tuberculosis, and expectoration may be profuse, but hemoptysis is rare.

6. Sputum.—The sputum will, of course, unless there is present an associated tubercular infection, be negative for tubercle bacilli. A sputum persistently negative for tubercle bacilli, from a patient with signs and symptoms simulating tuberculosis, should bring to our minds instantly the possibility and probability of pulmonary syphilis. By special lab-

*Read before the Valley Medical Association at Harrisonburg, Va., May 25, 1922.

oratory methods, the spirochaeta can be demonstrated in the sputum in many cases of syphilis of the lung.

7. Dyspnoea.—Dyspnoea is present and more marked in syphilis of the lung than it is in tuberculosis. This is due, perhaps, to the fact that the pulmonary lesions of syphilis are more pronounced at the bases of the lungs, while the lesions of tuberculosis are more marked at the apices, and also because there is apt to be more circulatory involvement in the syphilitic cases.

8. Loss of Weight, Appetite, and Strength. —These symptoms are always present at some stage of pumonary lues, but are never so marked as in tuberculosis. As mentioned above, often the patient may appear to be in fairly good physical condition, and at the same time have a moderately advanced case of syphilis of the lung. This, however, is not always the case, as I shall presently point out to you. Because, in the case I am reporting, there was marked loss of weight, appetite and strength.

9. Night Sweats.—Nocturnal sweats are the rule in syphilitic lung conditions, but are more variable in character than in tuberculosis. In those cases showing an atypical temperature curve, there is usually a marked variance in the sweats.

10. Wassermann.—The Wassermann test will usually be positive in syphilis of the lung, but not always. Our experience has shown us that clinically we may often have a clear-cut case of syphilis in any organ of the body, and yet get a negative Wassermann. So, while we cannot disregard a negative Wassermann, we cannot afford to give it undue emphasis.

11. Lung Findings.—When we examine the patient's chest, there are certain characteristic pulmonary findings which will aid us in our differential diagnosis. In the first place, syphilis usually attacks the middle, or the bases of the lungs, most frequently the latter, leaving the apices free. This is in marked contrast to tuberculosis which almost uniformly attacks the apices first. In fact, Dr. Lawrason Brown, of Saranac Lake, claims that the burden of proof is on any man who makes a diagnosis of pulmonary tuberculosis when there is no involvement above the second rib in front, or the third vertebral spine in the back.

The pulmonary lesions of syphilis are also characterized by marked dullness, and diminution of breath sounds with a paucity of rales. These rales will, when present, be almost uniformly found at the bases of the lungs. They are usually dry and crackling.

12. Therapeutic Test.—Oftentimes the diagnosis is only made by the therapeutic test, namely, the institution of vigorous anti-syphilitic treatment, which is followed by a cure or, at least, a marked improvement in the patient's condition.

13. Treatment.—The treatment is that which we would pursue in a case of syphilis elsewhere in the body—namely, salvarsan, mercury, and iodides, together with such tonic and hygienic treatment as would tend to aid in restoring the patient to health and strength. An early diagnosis is very necessary, if we would hope to get striking and lasting results.

Report of Case.

White woman, laundress, aged 45, first seen on December 21, 1920. The following history was obtained:

Family History.—Father living; age 69; in fairly good health, except that he suffers great deal with headaches. He had during childhood what was supposed to be tuberculosis of the bone. Patient's mother died at age of fifty from "paralysis." Three brothers living and well. Three sisters living and in fairly good health. One aunt died of tuberculosis; one aunt died of "cancer of the stomach."

Past History.—Patient had the usual diseases of childhood, such as measles, mumps and whooping cough and, in addition, had scarlet fever and diphtheria, with no sequelae so far as she knows. Never suffered from tonsillitis. Supposed to have had typhoid fever at age of 35, but was only confined to bed for about two weeks. Has suffered with rheumatism since childhood. At age of sixteen, was confined to bed for one year with rheumatism. Always had at time of rheumatic attacks, a red, splotchy, eruption, which faded away slowly as she improved. Previous to present illness, had had no attacks of rheumatism for several years. During childhood had many open sores on feet and legs, which were slow in healing. Left deep scars, which are now visible. Menstruated first at age of fifteen; has menstruated regularly every four weeks since. No menorrhagia or metrorrhagia, but dysmenorrhea and leucorrhea since menstruation began. Was married and lived with husband for several years but was never pregnant. Three years ago first noticed a small

lump in right breast. Was told by a physician that this was cancer, and an operation was advised. Breast was very sore but not red or swollen. Year later noticed a similar lump in the left breast. Both masses gradually grew larger.

Present Illness.—Two weeks previous to December 21, 1920, patient had been suffering with pain in left shoulder and both knees. On December 19, she noticed purplish red splotches over the lower extremities. She had had a poor appetite, an occasional night sweat, malaise, and some dyspnoea, for several months previous. Had lost some weight; she did not know how much.

Physical Examination.— White woman; apparently aged 45; poorly nourished; slightly anemic; evidently suffering considerable pain. Temperature 101; pulse 124; respiration 22. Complaining of pain in left shoulder and knees, and dyspnoea on lying down or on slight exertion.

Head and neck negative except for several decayed lower teeth. Pupils reacted normally to light and accommodation. No cervical glands enlarged.

Thorax.—Heart slightly enlarged downward and to the left. Apex at lower border of fifth interspace, three and one-fourth inches from the midsternal line. Loud, blowing, systolic and diastolic murmur; to and fro murmur, heard best at the apex, but transmitted quite audibly to the axilla. Blowing, systolic murmur also heard at the tricuspid area; and slight systolic murmur heard at second right interspace. Slight thrill at apex. Chest poorly developed; expansion poor. Supraclavicular fossae deep; no palpable glands. Fremitus slightly decreased at both bases. Resonance considerably diminished at both bases. Few dry, crackling, rales, over both lungs, principally at bases. Both breasts were tender and showed nodular masses. No redness nor inflammation. No palpable axillary glands.

Abdomen.—Negative except for slight tenderness in the right lower quadrant. Liver and spleen not enlarged.

Extremities.—Left shoulder joint slightly swollen, tender, and stiff: movements painful. Both knees slightly swollen, tender, and stiff. Purpura over both lower extremities. Scars on both ankles. No swelling of limbs or ankles.

Pelvic Examination.—Slight purulent discharge from vagina. Tenderness in right fornix; retroverted uterus; no lesions on genitalia.

Urinalysis.—Sp. g. 1.018; acid; slight trace of albumen; no sugar; few pus cells; no blood or casts.

Wassermann.—One week later was negative.

Patient was kept in bed and given salicylates and digitalis. Improvement was gradual and, in a few weeks, patient was able to resume her work as a laundress. She was now free from pain and her dyspnoea was diminished. In February, 1921, patient began to cough a great deal, and have occasional night sweats. She coughed up a large quantity of frothy sputum, but no blood. Her temperature in evening ranged from 100 to 102. Dyspnoea was more marked than previously. Appetite was very poor; continued to lose weight, and was practically bed fast. The lung findings were as previously noted, with the possible exception that they were more pronounced. Sputum and Wassermann negative.

On March 9, 1921, patient was admitted to the hospital. Her temperature range was from 97.6 in the morning to 100 in the evening. Pulse range from 90 to 120. She was put to bed on forced feeding and plenty of fresh air, but showed little improvement. On March 17, under local anesthesia, the left breast was amputated. Sections from this showed it to be a chronic mastitis, the definite nature of which was not stated by the pathologist. I rather expected a luetic origin, and consequently put the patient on daily inunctions of mercurial ointment. From this time (March 28) on, there was a beginning of improvement in the condition of the patient. On April 8, the right breast was removed under local anesthesia. On April 15, patient developed a localized periostitis and osteomyelitis of the left fibula, which was incised and drained on April 21. Four days later patient was given .9 gm. of neosalvarsan which was repeated weekly until six doses had been given. After the first dose of neosalvarsan, patient began to show marked improvement. Appetite increased, cough began to disappear, night sweats were less frequent, and there was a gradual gain in weight. On May 15 patient was put on potassium iodide gr. XV t. i. d. p. c. From this date until June 1, 1921, when patient was discharged from the hospital, she never had any temperature. When she left the hospital, she had no cough, dyspnoea, nor night sweats. Her appetite was splendid, and she was slowly

gaining weight. She was instructed to keep up her iodides and mercury.

This patient was last seen on December 27, 1921, when she came in to consult me as to the advisability of matrimony. Examination at this time showed the following: Patient had gained 15 pounds in weight; color was good; arthritis very seldom bothered her; appetite was splendid; there was no cough, dyspnoea, nor night sweats. Lungs showed a few crackling rales at both bases. She stated that she felt better than at any time for years.

Here then I think we have a case of syphilis of the lungs which was only proven so by the institution of antisyphilitic treatment which was followed by beneficial results. You will note that in this case the Wassermann was always negative and that the case closely simulated pulmonary tuberculosis. I am of the opinion that in those cases simulating tuberculosis, after we have ruled out tuberculosis, we should institute antisyphilitic treatment, regardless of the fact that the Wassermann may be negative, on the assumption that we are dealing with a case of syphilis of the lungs.

REFERENCES.

Carter, H. G. Pulmonary Tuberculosis and Syphilis. Virginia Medical Monthly, January 1922.
Brown, L. Certain Fundamentals in the Early Diagnosis of Pulmonary Tuberculosis. Jour. A. M. A. Jan. 14, 1922.
Lisser. Syphilis of Lung. Am. Jour. Med. Sciences. March 1918.

OPTOMETRY—ITS LIMITATIONS AND DANGERS.*

By HUNTER H. McGUIRE, M. D., Winchester, Va.

We are living in an age in which the truth of the saying of P. T. Barnum, that "The American people like to be humbugged," is more apparent than it was in the days when that noted showman gathered in his shekels from a not undnly discriminating public. This characteristic of the American people represents very accurately the attitude of the public towards the medical profession as a whole and to the various specialities which, because of the demand for highly developed talent, have originated in that profession.

Realizing that the layman and especially the unintelligent layman, because of a lack of knowledge concerning the so-called mysteries of medicine and surgery, is unable to always exercise an unerring judgment with regard to the treatment of his physical disabilities and impressed with the opportunity for commercializing this innate weakness on the part of mankind, there has sprung into existence an army of charlatans and quacks whose sole purpose is to discredit scientific medicine and to enrich their coffers by the dissemination of false propaganda with regard to the treatment of disease.

We are all thoroughly familiar with the practices and methods of the osteopaths, the chiropractors, and the many and various healers, who have, in recent years, kept their activities so prominently in the public eye, and we are not unmindful of the efforts that have been made in the profession to curb these activities and to enlighten the public as to the spurious methods adopted by these so-called benefactors of the human race, but medical men as a body have failed to take note of one class of these individuals whose special province has been to impress the public with their ability to correct visual defects by methods superior to those in vogue by men who have made ophthalmology a life study. For many years the country has been flooded and the eyesight of the nation has been tampered with by an aggregation of charlatans, who, parading under various names, have traveled from home to home in the rural districts or set up shops in the towns and cities and proclaimed to the world, in the daily press or the county weekly, their special ability to cure most of the ills to which human flesh is heir, by means of optical lenses.

The eyesight specialist, the refracting optician, are terms which have been employed to designate this group until very recently when it was realized that a more high sounding title would be better adapted to their purposes and so, by a process of evolution, the word optometry has been brought forward as one which would appeal more strongly to a discriminating public.

Under the more refined title, the optometrist has added to his prestige by a more elaborate equipment of his shop, his messages to the newspaper readers, setting forth his virtues, are more carefully phrased and are furnished to him in job lots by the wholesale optical houses of the country.

Thus it is that optometry, by the creative

*Read at the meeting of Valley Medical Association at Harrisonburg, Va., May 25, 1922.

genius of a group of irresponsible men and effective newspaper advertising, has been brought into prominence and the American layman, always willing to accept something new and impressed with the name and the offer of free consultation, takes his eye to the shop for repairs just as he would his stick pin or his watch. But not only has the general public yielded to some extent to his daily appeals, but reputable physicians have been known to send patients to the optometrist for the correction of errors of refraction. While happily this practice is not common, the fact that even a few physicians, by referring patients, endorse his methods, gives to the optometrist an added security in the promulgation of his theories and practices.

Before condemning any method, however questionable it may be, which apparently has for its object the relief of human suffering, it is only fair and proper that medical men should investigate its merits and be in position to render an intelligent verdict based on facts and not on preconceived opinions with regard to anything outside of the domain of scientific medicine.

Now let us investigate optometry. What does it mean? What are its limitations and dangers? If it has merits, what are they? If it is an evil, how can it be suppressed?

The origin of the word optometry is obscure and its derivation is therefore unknown. Two definitions of the term are given in the American Encyclopedia of Ophthalmology, namely, "The measurement of the range of vision and the measurement of visual acuity and the fitting of glasses to correct visual defects." To these definitions the following sentence is significantly added: "A term adopted by opticians who prescribe and fit glasses." If these definitions are correct, and there is no reason to assume that they are not, it must be admitted that the sphere of usefulness of the optician, or so-called optometrist, is limited to the mechanical correction of visual defects by optical lenses, without taking into consideration the many and varied conditions of the eye and of the body which are frequently associated with errors of refraction. In other words, he treats and regards the eye more as a mechanical instrument whose defects and abnormalities are capable of being entirely corrected by mechanical measures than as a human, vital organ, delicately and wonderfully constructed, whose function is closely interwoven and harmoniously blended with those of the other organs and structures which go to make up the human economy.

It is a well known fact that refraction work comprises fully three-fourths of the activities of the ophthalmoligist and that his success as an ophthalmologist is largely dependent upon his ability as a refractionist.

The art of refraction, and it is an art, necessitates more painstaking effort and more mature judgment than any other branch of ophthalmology. Not only must the refractive state of the eye be carefully and accurately estimated by every known scientific method, but the eye must be studied for evidences of disease or structural defects and the body for conditions which influence the action of the ciliary and the external ocular muscles.

It is also well known in ophthalmology that in the great majority of cases it is the latent error of refraction which is the responsible factor in the production of eye-strain and the train of symptoms which result from eye-strain. In other words, it is that degree of error which is overcome by the action of the ciliary muscle and which cannot be accurately determined unless the eye is under the influence of a cycloplegic and objective methods are employed to discover it. No refraction estimation is complete without the use of the ophthalmoscope, the retinoscope and other instruments of precison which enable us to determine, objectively, the amount of the error and its character, and no prescription for lenses should be given any patient until his eyes have been studied for evidences of disease as well as for abnormalities of the refractive state. It is hardly necessary to add that such examinations should only be undertaken by the trained medical man.

The impression seems to be current that if the eyes are free from disease, the optometrist is just as capable of providing proper lenses for the correction of errors of refraction as the ophthalmologist. If we look critically into the methods of examination employed by the optometrist, it is not difficult to see the absurdity of such statements. His examination, if we might term it such, is limited to the employment of test lenses and test types for the determination of the amount and character of the refraction error and he is de-

pendent entirely upon the statements of his patient to verify his findings. He has absolutely no means of estimating the total refraction error in the case of hypermetropia or of knowing whether he is dealing with an artificial myopia due to a cramped ciliary muscle or a swollen lens, or a true myopia resulting from an elongation of the antero-posterior diameter of the eye. He cannot use the ophthalmoscope because years of experience are necessary to master this instrument, particularly in estimating refraction errors, and he is unable to use the retinoscope because the law does not permit him to use drugs to relax the accommodation, an essential condition for obtaining correct results in retinoscopy.

It would, therefore, appear to be quite evident that the optometrist with his limited mechanical and mental equipment, his pitiful lack of knowledge concerning physiological optics, and the very crude and inadequate methods he employs, is not the proper person to take charge of a refraction case even though the eye be free from disease or structural defects. Those of us who are daily brought in contact with the results of his activities cannot fail to be impressed with the number of poor little tired ciliary muscles to whose burden he has added and which are tormented in an effort to adjust themselves to inappropriate lenses.

So much for the limitations of optometry and now let us consider the more serious side of the situation—what are some of its dangers?

In considering this aspect of the subject, certain facts should be kept in mind. In the first place it should be remembered that the great majority of optometrists are uneducated men, and I am not referring to medical education, but to the well rounded individual who has been broadened and cultured by academic and collegiate training. They, therefore, lack those qualities of mind which, if directed into proper channels might make them subserve some useful purpose. There are, of course, some exceptions to this rule, but the vast majority of optometrists today are men who have gained their knowledge of the human eye from the optician's shop or the jeweller's bench. A limited number obtain degrees from so-called colleges of optometry which issue diplomas after the applicant has studied a course of lectures which are sent him through the mails, and a smaller number are graduated from the school of optometry of Columbia University, where, much to its discredit, a course is given in this branch.

Does it not constitute a grave danger to the American public when it is realized that a large number of our citizens are entrusting their eyesight to men who are neither fitted by training nor environment to minister to the needs of the most delicate organ in the body, and who represent a so-called profession which seeks to impress the public with a high sounding title and false propaganda through the daily press?

Hardly a day passes that the busy ophthalmologist is not called upon to treat pathological conditions which the optometrist has attempted to correct by optical lenses. Beginning glaucoma, incipient cataract, optic nerve atrophy, gross intraocular changes, and choked disc, the result of brain tumor, are a few of the lesions which he feels are capable of correction by specially ground glasses and the pitiful part of it is that these patients, in the delusion that glasses will help them, are frequently permitted to go hopelessly blind before they seek relief from those who are competent to give it.

Only recently, in fact while this paper was in course of preparation, a young girl with a densely infiltrated vitreous and other evidences of a very acute uveitis presented herself for treatment because the concave lenses which the optometrist had prescribed were not curing her trouble. Hundreds of just such instances, as they daily occur in the routine practice of every ophthalmologist, could be cited and I am sure that the ophthalmic members of this society will bear me out in this statement. The optometrist is feeding the ophthalmologist but he is feeding him with material which represents inaccuracy, gross malpractice, and frequently with destructive intraocular changes which could have been prevented if the patient could have been seen in their incipiency.

No one has a higher regard for the ethical prescription optician than I. His work is important and the advances he has made in lens grinding and in perfecting optical accessories have proved to be a blessing to humanity but, when by reason only of his mechanical knowledge he attempts to treat visual defects, he becomes a public menace and his use-

fulness is at an end. It is just as logical for the manufacturer of surgical instruments to do surgery and for the druggist who compounds prescriptions to prescribe for his customers as it is for the optometrist to treat diseases and abnormalities of the eye,

Is he interfering with the work of the reputable specialist in eye diseases? Absolutely no. His newspaper notoriety excites the interest of the public with regard to visual defects and the public seeks assistance from both the oculist and the optometrist. Furthermore, a large proportion of his cases, because of ineffectual results, finally find their way to the office of the ophthalmologist. I think I am not overstating the case when I make the assertion that the advent of every new optometrist in a community means increased work for the trained specialist in eye diseases.

If I have succeeded in proving my contention that optometry is an evil, what can be done to correct it and how can the public be protected?

I do not believe anything can be accomplished by legislative enactment. Any attempt to legalize optometry would only serve to create the impression that it was elevated to the plane which the various specialties of medicine occupy and would give it an undue importance in the public estimation. In my opinion, the general practitioner of medicine is the one man who can enlighten his patients and through them the general public, as to its limitations and with regard to its dangers. Because of the frequency with which patients seek his advice concerning their ocular troubles, he is in a position to intelligently impart that knowledge which every layman should acquire, concerning that most precious possession of the human race, the eyesight which God has given us. He alone can impress his patients with the truth as it should be known and he alone can free them from those influences and agencies which seek to destroy and bring into disrepute those methods of procedure which ophthalmology has endeavored to contribute to scientific medicine.

HISTORICAL NOTE ON APPENDICITIS.

By B. M. RANDOLPH, M. D., Washington, D. C.

I was much interested in reading in the June number of the VIRGINIA MEDICAL MONTHLY the "Rambling Remarks In Re Appendicitis," of Dr. Stuart McGuire. Like him, "I have often wondered how a condition which was so frequent and fatal could have escaped recognition by clinicians of the past, who were justly noted for the accuracy of their observations." I wonder still more since some years ago I came across the fact that there was published more than forty years before the contribution of Fitz, a very competent clinical and pathological description of appendicitis, which the medical and surgical profession saw fit to bury for a generation. The thing is inexplicable, for assuredly the names of Richard Bright and Thomas Addison were the names of men whose teachings could not properly be ignored.

What follows I have copied from a book found in the library of the Surgeon-General of the Army, in Washington, entitled, "Elements of the Practice of Medicine," by Richard Bright, M. D., and Thomas Addison, M. D., London, 1839, pp. 498-501.

"INFLAMMATION OF THE CAECUM AND APPENDIX VERMIFORMIS."

"That portion of the intestine which is lodged in the right iliac region is frequently the seat of inflammation, and affords peculiar symptoms, with which it is right that the student should be well acquainted. The history of this affection is often as follows: The patient has complained, more or less, for some time past, of pain and uneasiness in this part increased on exertion, or after neglect of the bowels, or excess in eating and drinking; he has, however, retained such share of health, that he has not been interrupted in his daily avocations, till, after some unusual exposure to cold, or some long walk, or other over-exertion, he has been suddenly seized with more severe pain, attended with rigors, chills, and sometimes with sickness and violent vomiting. The pain and tenderness become excessive, and extend to the neighboring parts of the abdomen. A hardness and tumefaction are soon very evident to the hand in the part first affected; this continuing, general symptoms of peritonitis often take place, and terminate fatally; but under careful treatment, the inflammation remains circumscribed, and becomes even less extensive, assuming the form of a local, deep seated abscess. The threatening symptoms of peritonitis subside; the tumefaction just

above the crest of the ilium on the right side is more and more obvious to the touch, and gradually shows a tendency to point: the constitution still suffering severely. In process of time it either opens of its own accord, or is assisted by the lancet, and a discharge of ill-conditioned pus follows, which, from its peculiar fetid smell, and from its appearance, is soon discovered to be mingled with feculent matter. The discharge continues for many weeks, and the patient often sinks at length from exhaustion. In other cases, when the powers of the system are previously unbroken, the abscess closes, and permanent recovery is obtained.

"*Mordid Appearances.*—From numerous dissections it is proved that the faecal abscess thus formed in the right iliac region arises in a large majority of cases, from disease set up in the appendix caeci. It is found that this organ is very subject to inflammation, to ulceration, and even to gangrene; and moreover, that it is occasionally thickened and ulcerated from tubercular deposits, if the peculiar diathesis favors that change; so that this little worm-like body is often detected in the midst of the abscess, with a perforation at its extremity; or by ulceration higher up in its parietes, a considerable portion of it, nearly or entirely separated, is found in a disorganized condition amongst the pus and faeces which fill the abscess.

"*Exciting Causes.*—It is possible that the secretions of the appendix itself may sometimes become diseased, and give rise to inflammatory action in the part; sometimes we can plainly discover that stricture, amounting even to occlusion of the cavity, has taken place, so that the extremity has been distended with its own secretions; and this may probably give rise occasionally to inflammation; at other times we find little oval masses of faeces impacted in the canal, which have pretty obviously produced the irritation; sometimes a foreign substance, as a cherry stone, or other seed, has been detected in the appendix; but one of the most common causes is undoubtedly the formation of a peculiar concretion which is moulded to the extreme cavity of the canal, and which is composed of coats or layers of the earthy phosphates, with occasional alternate layers, probably, of animal secretion, or of feculent matter."

These great clinicians were physicians to Guy's Hospital, and lecturers on the practice of medicine. The book quoted from was written for their students. These students were of sufficient calibre to appreciate the importance of Bright's disease of the kidneys, of Addison's disease of the suprarenals, and of Addisonian anaemia, but seem to have ignored what should have been epoch-making observations on appendicitis. I can attribute it only to a state of mind as prevalent today as it has been in the past, viz., a lack of interest in the post mortem examination.

2010 *R Street, Northwest.*

The Truth About Medicine

During July the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial remedies:

The Abbott Laboratories:
Neocinchophen-Abbott Tablets 5 grains.
Louis Hoos:
Hoos Albumin Milk.
Mallinckrodt Chemical Works:
Benzyl Benzoate—M. C. W.

Book Announcements

Diseases of the Skin. By HENRY H. HAZEN, A. B., M. D. Professor of Dermatology in Medical Department, Georgetown University, and in Medical Department, Howard University, Washington; Sometime Assistant in Dermatology in Johns Hopkins University, Baltimore. Second Edition. St. Louis. C. V. Mosby Company. 1922. 8vo. 608 pages with 241 illustrations, including two color plates. Cloth. Price, $7.50.

Principles and Practice of X-Ray Technic for Diagnosis. By JOHN A. METZGER, M. D., Roentgenologist to School for Graduates of Medicine, Medical Department, University of California, Southern Division, Los Angeles. St. Louis. C. V. Mosby Company. 1922. 8vo. 144 pages with 61 illustrations. Cloth. Price, $2.75.

Hughes' Practice of Medicine. Including a Section on Mental Diseases and One on Diseases of the Skin. Twelfth Edition. By R. J. E. SCOTT, M. A., B. C. L., M. D., New York, Editor of "Witthaus' Essentials of Chemistry and Toxicology," etc. Philadelphia. P. Blakiston's Son & Co. 810 pages with 63 illustrations. Cloth. Price $4.00.

The Practical Medicine Series. Comprising 8 volumes on the Year's Progress in Medicine and Surgery. Under General Editorial Charge of CHARLES L. MIX, A. M., M. D. **Volume I. General Medicine.** Edited by George H. Weaver, M. D., Lawrason Brown, M. D., Robert B. Preble, A. M., M. D., Bertram W. Sippy, M. D., and Ralph C. Brown, B. S., M. D. Series 1922. Chicago. The Year Book Publishers, 304 South Dearborn Street. Cloth. Price of this Volume $3.00. Price of series of 8 Volumes $15.00.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.
G. H. WINFREY, Business Manager and Secretary-Treasurer.
AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 SEPTEMBER, 1922 No. 6

Editorial

Gastric Analysis and the Stomach Tube.

No matter what the trend of opinion, from time to time, may be, in regard to the value of gastric analysis in the diagnosis of disease of the stomach, the fact remains that stomach function must always claim a prominent place in the problems of diagnosis. In addition, it may be said that the use of any diagnostic procedure, no matter how incomplete, which may throw light upon the functionation of the stomach, must be used by the diagnostician in attempting to assemble the needed evidence in disease problems.

Through some sort of pessimistic influence, the stomach tube and duodenal tube, in the fractional testing of gastric contents, of late, have been lightly spoken of as diagnostic instruments of value. This is, indeed, much to be lamented. These instruments for studying stomach function and stomach conditions are of undoubted value. Fortunately, champions of the stomach and duodenal tube are not lacking. Only a just evaluation of the stomach conditions, as obtained from studies of its contents after the test meal, is desired by its advocates. Extravagant claims are not made by them but it is held that a reasonable understanding of the common disorders of the stomach may be obtained by use of the stomach and duodenal tube. The writer wishes to take sides with the latter group and urge the more frequent use of the stomach and duodenal tube in the study of cases presenting symptoms referable to the stomach. Roentgen ray study, by fluoroscope and plate, of stomach contour and motility, is an important associated method of invaluable service in well rounded gastric examinations.

But, clinically, although the patient protests, it is quite unsatisfactory to rely wholely upon x-ray examination. The stomach tube may furnish important data as to the nature and amount of the gastric secretion. For instance, the presence of excess of mucus, blood, the concentration of hydrochloric acid, the odor, the state of digestion of food particles, the length of time required to evacuate the stomach, are but a few of the points which may be brought out in this sort of an examination. Again, only recently, while introducing a tube, and after we felt that the tip was in the stomach, we observed the return of the test meal, free of odor, and wanting in the usual appearance of gastric juice. Additional aspirations brought clear blood. Esophageal stricture was suspected. X-ray examination showed the tube dragging in a diverticulum above a well organized stricture at the junction of the second and lower third.

The duodenal tube is also of added value because of its uses in studying the secretions and contents of the duodenum and the gall tract. The recent work in lavage of this section of the alimentary tract is but another step in the refinement of methods which have for their end the more accurate study of the misfunction of this section of the gut. The Lyon method of lavage of the gall tract offers interesting possibilities in diagnosis as well as in therapy.

Gastric analysis may not be expected to disclose direct evidence of changes in the form and contour of the stomach: roentgen ray must be relied upon for that information. Besides, x-rays may be depended upon under fluoroscopic and plate studies to show alterations in form, mobility and position of the loaded stomach.

By the dual use of the test tube and roentgen rays, this important power of the stomach may be estimated: a prompt and proper evacuation of the gastric meal is a factor of significance in the ultimate complete usefulness of the food to the body; not to mention the harm-

ful effects upon the stomach itself and the body at large, of the too long retention, over long periods, in the stomach of putrefactive and fermentative food products. Clinicians are daily brought face to face with the problems of gastric retention.

Rehfuss and Hawk* have pointed out, we should observe that there are within the limits of normal health much variability in the evacuation time of the stomach.

Gastric analysis may be relied upon to throw important light upon the motor and secretory function of the stomach and, also, to disclose the evidence of pathological signs. So it is a narrow and limited view† of this question to say that the procedure of gastric analysis is a failure because of the claim that the small samples obtained may not be representative of the gastric contents remaining in the stomach. The acid concentration and the variation in the curve in the "fractional method" may be open to criticism, as to the invariable trustworthiness of the interpretations, but that fact should not invalidate the use of the method because of the wide range of positive facts on gastric work obtainable by its use. Even if it were the end of gastric analysis merely to obtain the degree of acidity of the stomach contents after the standard test meal, the procedure of gastric analysis is justified in the diagnosis of stomach conditions. But it is a procedure with possibilities of a far more reaching significance. As Rehfuss and Hawk* have stated, gastric analysis is "a measure of gastric work." This work of the stomach is disclosed by the gastric examination in the (1) motor function as shown by the time and duration required for the stomach to evacuate a standard test meal; (2) secretory function as shown by the variations of the acid curve during the intervals of gastric digestion; (3) the presence in expressed stomach contents of evidence of pathology as shown by mucus, pus, blood, bacteria, etc.

*Gastric Analysis: Fundamental Principles; Rehfuss and Hawk. J. A. M. A., Vol. 76, No. 6, page 371.
†Editorial, J. A. M. A., February 18, 1922, page 514.

News Notes

The Norfolk Convention.

Preparation is being pushed in Norfolk to be in full readiness for the coming meeting of the Medical Society of Virginia. The members of the Norfolk County Medical Society earnestly desire this meeting to be the best on record; and are hoping that every member of the State Society will do his part, at least by his presence; all the better if he will take active part in the program;—but in any case *COME!*

The Chairman of the Entertainment Committee, Dr. R. Lloyd Williams, and the State President, Dr. E. C. S. Taliaferro, are planning several enjoyable social events to supplement the excellent scientific program. Attendance upon either the regular sessions of the Convention, or the social features alone would be ample compensation for the time spent, but when both are combined the visitor will be richly rewarded for any sacrifice needed in order to be present. While the full program will be announced later, among the entertainment features will be an oyster roast, always a delight; an evening with the President, who is famed as a prince of hosts, his abilities in that direction being, however, surpassed by Mrs. Taliaferro's outstanding qualities as hostess. A smoker will probably be arranged during the meeting.

Special arrangements will be made for the comfort and pleasure of the ladies; a Special Committee in charge of this matter is making plans which they hope will result in enjoyment to a large number of visiting ladies. Let this meeting be marked by an unusually large attendance of wives and daughters. They need the change and we need the sunshine of their presence.

Hotel accommodation in Norfolk is ample. If you will make your wants in that direction known to Dr. R. Lloyd Williams, 405 Taylor Building, Norfolk, reservations will be made so that your comfort will be assured. Already applications for rooms are being received: better not delay getting in yours in good time.

Arrange to be here for the opening sound of the gavel, and remember that the last session will be the one from which you will derive most benefit, so do not be in a hurry getting away. Give those good people at home a chance for recuperation; your return will be all the more appreciated when it comes.

LOCKBURN B. SCOTT, *Sec'y*
Norfolk Co. Med. Society.

Notice to Wives of Members of the Medical Society of Virginia.

It is herewith announced that, at the annual meeting of the Medical Society of Virginia to be held in Norfolk, October 31—November 3, a Virginia Woman's Auxiliary will be formed, this to be composed of representatives from each county in the State. The work of the Auxiliary will be to look after the general medical interests of each community, especially in regard to child welfare, school sanitation, and the local health conditions. It is earnestly hoped that a large number of ladies will attend and assist in having Virginia to be one of the first states to join in this National movement, which has the approval of the American Medical Association.

For information as to the organization of this Auxiliary, address the Medical Society of Virginia, 104½ West Grace Street, Richmond.

The Gorgas Memorial Fund.

At the St. Louis annual session of the A. M. A., the Board of Trustees reported to the House of Delegates that in response to a request received from the directors of the Gorgas Memorial Institute of Tropical and Preventive Medicine for the co-operation of the American Medical Association, the Board had taken action which resulted in the appointment of the following committee, representing the Association, to act on the project: Dr. George E. de Schweinitz, Philadelphia; Dr. Charles W. Richardson, Washington, D. C., and Dr. Fred B. Lund, Boston. The House of Delegates unqualifiedly endorsed the Gorgas Memorial.

Upon the suggestion of President Porras of Panama, it has been resolved that a fitting memorial shall mark the humanitarian service of the late Major General William C. Gorgas, and the beneficent influence of his life and work on mankind throughout the world.

The plan is to build at Panama an institute for the study of tropical and infectious diseases, with a hospital, laboratories, departments for research and all other facilities required in an institute of this character, erected and administered according to the most progressive, modern ideals. The Panamanian government, has donated the great Santo Tomas Hospital, and also the ground on which it is proposed immediately to construct the buildings as they have been described. Dr. Strong has been appointed the scientific director.

An endowment of six and one-half million dollars will be required to enable the institute to carry on the work according to the plans which have been formed.

In conjunction with this work in Panama, there will be established in Tuscaloosa, Ala., the Gorgas School of Sanitation for the purpose of training country health workers, sanitary engineers and public health nurses, especially educated to deal with the problems peculiar to the Southern states.

The Republic of Panama has demonstrated its interest in this enterprise with splendid liberality. The physicians of our country, will surely make a contribution of which they will be proud.

A central committee has been formed, with Admiral Braisted, retired, ex-President of the A. M. A., as its president. The committee of three is to work in accord with the central committee, and through its members this appeal is made to the American medical profession.

The campaign for funds is to be international. A large response is expected from North, Central and South America, since the nations of these countries have been the chief beneficiaries of the labors of General Gorgas. Any sum will be gratefully received. Checks should be drawn to the order of the "Gorgas Fund" and should be mailed to the American Medical Association, 535 North Dearborn Street, Chicago.

The Augusta County Medical Association

Held its annual meeting August 2nd, at Stribling Springs, the Society being guests of the President, Dr. W. S. Whitmore. Following a short business session, there was a banquet. Officers elected for the coming year are:—President, Dr. J. B. Stone, Churchville; vice-presidents, Drs. Geo. F. Hollar, Waynesboro; Guy Fisher, Staunton; and C. P. Rexrode, Mt. Solon; secretary, Dr. J. F. Fulton, Staunton; treasurer, Dr. J. L. Alexander, Staunton.

J. L. Fulton, *Sec'y.*

Prince Edward County Medical Society.

Present officers of this Society are: Dr. J. Weldon Smith, president; Dr. C. B. Crute, vice-president; Dr. Susan W. Field, secretary-

treasurer. All of these are of Farmville, Va. Meetings are held on second Thursdays. monthly.

The Clinical Congress of the American College of Surgeons

Will hold its twelfth annual session in Boston, October 23-27, 1922. As in the past the morning and afternoon sessions of each of the four days will be devoted to clinical demonstrations at the hospitals and medical schools. There will be five evening sessions and eminent American and European surgeons will be among the speakers.

A Physiotherapy Course,

Covering a year, will be offered at Walter Reed General Hospital, Washington, D. C., beginning October 2, 1922. Credit will be given for previous training in physical education, nursing, physiology, and anatomy, so that the course may be completed in six months or less. No tuition fees are required. Accepted candidates will be listed as student aides, and will be furnished quarters, rations, laundering of uniforms and $15 a month. Application blanks may be secured from the hospital upon request.

Dr. S. S. Gale

Has returned to his home in Roanoke, Va., after spending a few weeks at the Mayo Clinic.

Dr. George T. Harris,

Of Madison Heights, Va., has been appointed one of the school trustees for Amherst County.

Dr. J. H. Hare,

Of Newland, Va., has been elected president of the Stonewall Athletic Association, recently organized at that place.

The Southern Anesthetists

Will hold their organization meeting with the Southern Medical Association in Chattanooga, Tenn., November 13-16. All interested in attending or joining are urged to get in touch with Dr. William Hamilton Long, Organization Secretary, 1911 Duker Avenue, Louisville, Ky.

Dr. George P. Hamner

And family returned to their home in Lynchburg, Va., about the middle of August, after their annual camping trip on the Cowpasture River. Dr. R. M. Taliaferro, also of Lynchburg, was among the summer visitors at Dr. Hamner's camp.

Dr. and Mrs. Holcombe Robertson

And children, of Marcus Hook, Pa., were recent visitors at the home of relatives in Warrenton, Va.

Guests of Dr. R. E. Booker.

Dr. R. O. Lyell and family, of Miami, Fla., but formerly of Warsaw, Va., and Dr. P. G. Hundley and family of Lynchburg, Va., have been recent visitors at the home of Dr. R. E. Booker, at Lottsburg, Va.

Dr. George A. Stover,

South Boston, Va., is rapidly regaining his strength, after undergoing treatment at St. Elizabeth's Hospital, this city.

Dr. James O. Meade

Announces his removal from Fugates Hill, Va., to Mendota, Va.

Dr. Wilson E. Driver,

Of Norfolk, Va., has returned from Paris, where he went to attend the International Congress of Otology, which met in July. He took with him a patient to demonstate before the Congress a condition which he designates as auto-anaphylaxis of the ear.

Roanoke Doctors at White Sulphur Springs.

Drs. Claud Moore, N. F. Muir and G. L. Spitler, of Roanoke, Va., have returned home after a vacation spent at Greenbrier White Sulphur Springs, W. Va.

Dr. J. S. Horsley, Jr.,

Son of Dr. J. Shelton Horsley, of this city, is now serving as an interne at St. Elizabeth's Hospital, Richmond. Dr. Horsley graduated from Harvard University, Medical School, in June of this year.

The other interne at St. Elizabeth's Hospital is Dr. James Marquis, of Nebraska, who also graduated from Harvard this year.

The American Medical Editors' Association

Is to hold its fifty-third annual meeting in Cleveland, O., October 16 and 17, at Hotel Statler, during the annual convention of the American Public Health Association. Dr. Frank C. Lewis, of the *International Journal of Surgery*, is president, and Dr. F. H. McMechan, of the *Ohio State Medical Journal*, is secretary-treasurer.

Dr. R. L. Ozlin

Announces his removal from Dundas, Va., to 115 West Seventy-first Street, New York City.

Dr. Wm. B. McIlwaine

Has returned to his home in Petersburg, Va., after taking a special course in pediatrics in Boston and New York.

Dr. Thomas M. Winn,

Of Palmyra, Va., a graduate of the Medical College of Virginia in June of this year, has accepted an internship at Physicians and Surgeons Hospital, Wilmington, Delaware.

Dr. Warfield T. Longcope

Has been appointed professor of Medicine in the Medical School of Johns Hopkins University, Baltimore. Dr. Longcope was formerly professor of medicine at Columbia University, College of Physicians and Surgeons, New York.

Medical Education in the United States.

In the "Annual Presentation of Educational Data for 1922 by the Council on Medical Education and Hospitals," in a recent issue of the *Journal of the A. M. A.*, interesting statistics are given. Excluding premedical, special and post-graduate students, there were 16,140 medical students in the United States for the year ending June 30, 1922. This is the largest number since 1914. The three states furnishing the largest numbers of students were New York, Illinois and Pennsylvania, respectively.

It was noted that states having medical colleges contribute more students in proportion to their population than those which have no medical schools. Another interesting fact found was that the college which has a widely distributed alumni usually has a student body from an equally large number of states.

The number of women entering medicine is in the ascendency. During the past year 989 women were studying medicine, or 110 more than the previous year. Of all women matriculants, 121 were in attendance at the one medical college for women, while 764 were entered in the 67 co-educational colleges.

There are now 81 medical schools in the United States. Of these 74 are non-secretarian (regular), 3 homeopathic, 1 eclectic, and 3 nondescript. Sixty-eight of these are Class A colleges.

Dr. Charles C. Bass,

New Orleans, has been elected dean of the School of Medicine of Tulane University.

Dr. Henry J. Langston,

Who has been practising in Richmond, has moved to Danville, Va., and has offices in Arcade Building.

Dr. Susan A. Price

Has resigned as physician at Eastern State Hospital, Williamsburg, Va., and accepted a position as physician at Weston State Hospital, Weston, W. Va., with which hospital she was formerly connected.

Biltmore Hospital to Have New Home.

Construction is expected to start early this fall on the new home for the Clarence Barker Memorial Hospital, at Biltmore, N. C. The first group of buildings will cost $350,000. It has been decided to have one wing of this hospital as an orthopedic hospital.

Dr. Percy G. Hamlin,

Recently of the staff of the Eastern State Hospital, Williamsburg, Va., is doing post-graduate work in the North.

Dr. E. C. S. Taliaferro,

Norfolk, Va., has returned home after a visit with his family to Blue Ridge Summit, Pa., and Gloucester County, Va.

Dr. R. Rush Goad,

Recently of Hillsville, Va., announces his removal to Dublin, Va.

Drs. Wm. N. & Geo. W. Botts

Have formed a partnership and located in Appalachia, Va. Both of these doctors have just taken extensive work in New Orleans, Chicago and New York, in diseases of the eye, ear, nose and throat, and will limit their practice to these specialties.

Dr. Charles E. Dyer,

Who has been practising in Pulaski, Va., since his return from the war, has accepted the position as physician with the Jewell Ridge Coal Company, Jewell Ridge, Va.

Dr. G. G. Painter,

Pulaski, Va., returned home early in August,

much improved in health, after a six weeks' stay at Jefferson Hospital, Roanoke.

Dr. R. W. Selby

Announces his removal from Raccoon Ford, Va., to Middleburg, Va., where he is associated with Dr. H. A. Spitler. Dr. Selby announces that there is a good field at Raccoon Ford for a general practitioner.

Dr. E. E. Walker,

Who has been located at Evergreen, Va., has moved to Phenix, Va.

Dr. James W. Tipton,

Who has been doing general practice in Dublin, Va., is now taking a special course in New York in diseases of the eye, ear, nose and throat, in which he expects later to specialize.

Current Researches in Anesthesia and Analgesia,

In August, replaced the former Bulletin of the National Anesthesia Research Society, and will hereafter be published as a regular journal at $3 a year. The plan is eventually to cover and exhaust the international field in this branch.

Physicians in Congress.

The National Health Council bulletin announces that of the 531 members of both houses of Congress, only 8 are medical graduates. The great majority of the legislators are lawyers and two of the eight physicians are likewise members of the bar. The medical men in the Senate are Drs. Lewis H. Ball, of Delaware, Joseph I. France, of Maryland; in the House of Representatives they are Drs. John Jos. Kindred, of New York, Caleb R. Layton, of Delaware, Ladislas Lazaro, of Louisiana, Archibald E. Olpp, of New Jersey, John Wm. Summers, of Washington, and Lester D. Volk, of New York. Six of these are Republicans and two Democrats.

Dr. W. W. Insley

Has returned to his home in Christiansburg, Va., after spending several weeks attending clinics in Chicago.

Dr. Virgil B. Hirst,

Of St. Luke's Hospital, New York City, recently visited his former home at Purcellville, Va. Dr. Hirst was a member of the class of '18, University of Virginia, Medical School.

Dr. and Mrs. A. R. Shands,

Washington, D. C., after a visit in Appomattox County, Va., have gone to Portland, Ore., to attend the Episcopal Council.

Dr. and Mrs. C. S. Dodd,

Of Petersburg, Va., have returned home after a motor trip to Harrisonburg, Va.

Dr. George W. Parrott,

Charlottesville, Va., has been elected vice-president of a committee recently formed to arrange for the establishment of a band in that city.

Dr. W. J. Strother,

Culpeper, Va., has resigned as a member of the Board of Visitors of the Medical College of Virginia, and Col. Julien Hill, president of the State and City Bank and Trust Company, of Richmond, has been appointed as his successor, the term of office being for life.

Dr. R. D. Tucker,

Powhatan C. H., Va., has been elected a member of the board of directors of the Bank of Powhatan, Va.

Dr. Roy K. Flannagan,

Of the State Board of Health, returned to his home in Richmond about the middle of August, having sprained his ankle, while on a visit to the Boy Scout camp near Danville, Va.

Additional Appropriation for Leprosarium.

A bill has passed the Senate and gone to the House, calling for an appropriation of $650,000 to erect additional buildings for the National Leper Home at Carville, La. It was brought out in the discussion that the leprosarium is crowded and its facilities are so limited that it is unable to take care of additional patients, although there are 100 applicants. The U. S. Public Health Service has charge of the Lepers' Home and plans eventually to care for every leper in the United States.

Dr. N. P. Oglesby,

Who succeeded Dr. Robt. T. Glassell, of Bowling Green, Va., as physician for the

Jewell Ridge Coal Corporation, has now located at Dublin, Va.

Dr. J. M. Talbee,

Physician for the Consolidation Coal Company at Seaboard and Coaldan, Va., recently took a six weeks' vocational course at Johns Hopkins University, Baltimore. During his absence, his practice was looked after by Dr. C. E. Dyer, who has now moved to Jewell Ridge, Va.

Dr. Sheffey Goes as Missionary on the Congo.

Dr. Charles P. M. Sheffey, of Lynchburg, Va., sailed from New York, about the middle of August, to begin a medical missionary career on the Congo in Africa. He is a graduate of Randolph Macon College, a medical graduate of Johns Hopkins University, and served sometime as an interne in a Norfolk, Va., hospital.

Dr. Marshall W. Sinclair,

Until recently of Newport News, Va., after a post-graduate course in surgical pathology at Johns Hopkins Hospital, Baltimore, has moved to Anderson, S. C., where he has been appointed pathologist in Anderson County Hospital.

Dr. R. C. Carnal,

Recently of Piedmont Sanatorium, Burkeville, Va., is now associated with Monroe County Tuberculosis Sanatorium, Rochester, N. Y.

Government to Investigate Cause of Cancer.

The government is to begin an investigation into the cause of cancer. Asst. Surgeon General J. W. Schereschewsky, of the Public Health Service, has been detailed to make investigations and will establish headquarters in Boston, where he will have the cooperation of leading medical men in the work.

Are You Going to Norfolk?

All interested in the meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, hope your answer will be in the affirmative. Why not? You need a rest mentally and physically, and you will get both there. Make your reservations promptly. There will be plenty of room, but you will get better accommodations by applying early.

The invitation in this issue, sent by the secretary of the Norfolk County Society, will give an idea of the good time in store for you. In addition, our president, Dr. Taliaferro, has invited guests whom you will wish to hear.

Cards were sent out about the last of August, requesting titles of papers. If you have not sent yours, kindly attend to this at once. Do your part toward making this the biggest and best meeting of the Society.

The Medical Association of the Valley of Virginia

Will hold its regular meeting in Clifton Forge, September 28th, at 11 a.m. An interesting program is planned and, as this is the annual meeting, the election of officers will be held. The secretary of the State Society will attend and present some matters of importance. Dr. Chas. E. Conrad, Harrisonburg, is president, and Dr. Alex. F. Robertson, Jr., Staunton, secretary.

Good Health Week.

An organized movement for the promotion of better health will be inaugurated in "Good Health Week," which is to be observed throughout the country October 23-30. The Executive Committee of Good Health Week Promotion Bureau states that there are certain problems in the public health field which should be left entirely to the medical profession; others require engineering and manufacturing knowledge to develop; and still others have to do with the education of the layman as to the benefit to be derived from attention to health matters. Three of these which will receive special attention during "Good Health Week" are ventilation, sanitation and personal hygiene. The secretary-treasurer of this organization, Wm. F. Hatch, Room 704, 209 Grand Avenue, Milwaukee, Wis., will furnish any information desired.

Dr. E. J. Nixon,

Petersburg, Va., was chosen one the Brigade Commanders of the Sons of Confederate Veterans of Virginia at its annual reunion in Winchester, the latter part of August.

Other physicians noted as delegates at this meeting were Drs. R. B. Davis, Holdcroft, W. C. Powell, Petersburg, and J. N. Barney, Fredericksburg.

Members Executive Committee, American Legion, Va. Department.

Drs. C. N. Rucker, Clifton Forge, W. B.

Peters, Appalachia, and Chas. E. Dyer, Jewell Ridge, were elected members of the Executive Committee of the American Legion, Virginia Department, at its annual meeting in Charlottesville, August 24-26.

Dr. and Mrs. J. Allison Hodges,

Of Richmond, Va., have returned home after several weeks spent at their summer home at Montreat, N. C.

To Add New Unit to University of Virginia Hospital.

Plans are nearly completed for a new unit to the University of Virginia Hospital. This will be located south of the present buildings and will conform in structure to the wing on the north. It is to house the obstetrical and orthopedic departments. Its construction is made possible by the $50,000 gift of Paul McIntire. It is hoped that plans for the construction of this wing will be let in time to have it completed by next April.

Dr. A. J. Nelson,

Seattle, Wash., is now on a visit to this State. While east, he will visit a married daughter in North Carolina. Dr. Nelson is a native of Virginia but has made his home in Seattle for some years. He has been the recipient of many honors by the profession in the State of his adoption.

Dr. George M. Magruder,

Senior surgeon of the U. S. Public Health Service, and since 1919 in charge of the Norfolk Public Health office, has been ordered to Detroit as surgeon in charge of the office there. Dr. Magruder is a native Virginian and is an alumnus of the Medical School of the University of Virginia.

Dr. George B. Young, a senior surgeon in the service, recently at the Marine Hospital, at Stapleton, L. I., but formerly stationed at Norfolk, will succeed Dr. Magruder.

Honor Memory of Old-Time Doctor.

Friends of the late Dr. Godfrey L. Miller, of Winchester, Va., have raised $2,000 with which to erect a memorial to his memory. The memorial is to take the form of a fountain to be erected near Frederick County court house. It is to be built of Barre granite, will be nine feet high, and will contain two drinking fountains. Dr. Miller was a family doctor of the old school and was in charge of all Confederate hospitals in Winchester during the War Between the States. He died in December, 1920, at the age of 85 years.

Dr. S. C. Draper,

After practising medicine at Pulaski, Va., for a number of years, left early this month to locate at Aberdeen, Md.

Dr. L. E. Walton,

Recently of Marlington, W. Va., announces his removal to Pullman, W. Va.

Dr. W. W. McChesney,

Monarat, Va., accompanied by a friend, took a motor trip to New York, early in September. On the way, they stopped for a visit to relatives at Cartersville, Va.

Dr. Thos. G. Hardy,

Farmville, Va., attended the State Convention of the American Legion, in Charlottesville, the latter part of August.

Dr. J. N. Barney,

Fredericksburg, Va., was re-elected city health officer of that place by the New City Council.

Drs. John Blair Fitts and Thomas Wheeldon

Announce the opening of their new offices and gymnasium for the practice of orthopedic surgery at 15 East Franklin Street, Richmond.

Dr. and Mrs. William C. Powell,

Petersburg, Va., are home again after a ten days' visit to Blue Ridge, N. C.

Dr. and Mrs. J. C. Coulter,

Daughter, and some friends, of Charlottesville, Va., have just returned home after an automobile trip of over 1,200 miles through Maryland and Pennsylvania. While in Pennsylvania, Dr. Coulter visited his parents, who live a short distance north of Pittsburgh.

Dr. W. F. Draper,

Recently in charge of rural sanitation work in Virginia, is among five physicians who have just been designated assistant surgeons-general of the U. S. Public Health Service.

Dr. Murat Willis,

Of this city, has been elected professor of surgery for the Medical College of Virginia, to succeed Dr. Stuart McGuire, resigned. Dr. Willis, who has been professor of clinical sur-

gery, will enter upon his new duties at the beginning of the present session.

Dr. William S. Keister

Has been elected health officer of Charlottesville, Va., to suceed the late Dr. R. Lindsay Robertson. The present term of office will expire March next.

The New Altamont Hospital, Inc.,

Christiansburg, Va., which was formally opened on the 12th of April of this year, is a twenty-five bed, modernly equipped institution for general hospital work. This hospital is an outgrowth of the Altamont Hospital formerly operated at Cambria, Va., from 1912 to 1922, and is equipped with the latest and most modern facilities for taking care of surgical and medical cases. It is located in the west end of Christiansburg on two of the main highways leading out of town, and is situated on a four-acre tract of land, with plenty of shade and quiet surroundings to make the convalescence of patients as pleasant and agreeable as possible.

In connection with the hospital there is a well equipped laboratory for doing the usual laboratory work for a hospital of this type, and also an X-ray department for diagnostic work. The nursing department is in charge of a competent corps of nurses, and a training school for nurses is under comtemplation for the near future.

The hospital is in charge of a staff of local physicians, and every care and attention is given to the proper care and handling of patients.

The American Child Hygiene Association

Will hold its thirteenth annual meeting in Washington, D. C., October 12, 13 and 14, with headquarters at the New Willard Hotel. Full information about the meeting may be obtained from the Association headquarters, 17th and F. Streets, Washington.

The U. S. Civil Service Commission,

Washington, D. C., announces open competitive examinations for trained nurse and trained nurse (psychiatric) on October 18, 1922. Vacancies in the Panama Canal Service will be filled from this examination. Application blanks and further information may be obtained from U. S. Civil Service Commission.

The Service also announces an open competitive examination on October 10, for research assistant in child hygiene, to fill vacancies in the Children's Bureau, Department of Labor, and in positions requiring similar qualifications.

Provisional Birth and Mortality Figures.

Figures compiled by the Bureau of the Census indicate lower birth and higher death rates for the first quarter of 1922 than for the corresponding quarter of 1921. For the states compared, the highest birth rate for the first quarter of 1922 was shown for North Carolina, and the lowest rate for the State of Washington. The highest death rate for states compared was shown for the District of Columbia, and the lowest for Wyoming.

The Women's Foundation for Health, Inc.,

Has established headquarters at 43 East 22nd Street, New York City. The objectives of the foundation are: "To establish the conviction that health is generally attainable through individual effort and responsibility," and "to establish the conviction that mental health is as procurable as physical health." A number of representative women's organizations throughout the country are now co-operating in this work. They state that their plan is to have the physician and the lay member of the community co-operate in the furtherance of their efforts for better health.

The American Academy of Ophthalmology and Oto-Laryngology

Will hold its twenty-seventh annual meeting in the Twin Cities of St. Paul and Minneapolis, September 19-23, under the presidency of Dr. Walter R. Parker, of Detroit.

New Chair at Medical College of Virginia.

The Board of Visitors of the Medical College of Virginia by unanimous vote, have adopted a resolution to add a course in military tactics and science, with a United States officer in charge. Major Charles W. Sale, of the class of '07, of the former University College of Medicine, of this city, was elected to the professorship of this chair, and assumed his duties with the beginning of the present session.

Senate Passes Tariff Bill.

The Senate passed the tariff bill on August

19th, and it was sent to conference as the Senate made numerous changes. It is expected that a conference report will be adopted about September 15th. The Senate made notable changes in this bill regarding synthetic medicinals and chemicals, about which much controversy has existed. While efforts to continue the embargo provisions of the present Emergency Law did not succeed, prohibitive duties were incorporated, which are regarded as equivalent to an embargo. It was asserted that the manufacture of synthetic drugs and medicinals from coal tar products in the United States during the war could not be continued against German competition, unless amply protected by tariff duty. Special taxes are to be placed on these products.

Wanted.

Young physician qualified to practice medicine in Virginia who would be interested in an industrial position. Can get in touch with good proposition by addressing "Industrial," care Virginia Medical Monthly. (Adv.)

Wanted.

A doctor for large rural practice. A good living from the start and, when reorganized, should run to $4,000 or better a year. Address "The Taylor-Gay Company, Raccoon Ford, Va." (Adv.)

Location Wanted.

An unopposed practice where doctor is needed. Address "A." care this journal. (Adv.)

Obituary

Dr. William F. Driver,

A prominent and beloved physician of the Valley of Virginia, after suffering several years from diabetes, died at his home in New Market, Va., May 22, the immediate cause of death being an attack of pneumonia. Dr. Driver was born near Timberville, Va., July 3, 1877. He graduated in pharmacy at the former University College of Medicine, Richmond, and later in 1905, in medicine. He received many honors while at college having been president of the senior pharmacy class, second year medical class, and later president of the student body. During several school vacations, he served as pharmacist in Norfolk, Va. After graduating in medicine and serving a term as interne at Central State Hospital, Petersburg, he located in New Market, and was prominently identified with the professional and civic life of that community.

Dr. Driver was a member of his local and State medical societies. He was for a number of years secretary of the Shenandoah County Medical Society and later president of the Shenandoah Valley Medical Society. He was also a member of the Membership Committee of the Medical Society of Virginia.

He is survived by his wife, three daughters and a large family connection.

Dr. Willis Wilson Silvester, Jr.,

A prominent internist of Norfolk, Va., died at a Richmond hospital, September 4, after a short illness. He was thirty-three years of age and had graduated in medicine from the University of Pennsylvania, School of Medicine, in 1913. He was a member of the Norfolk County Medical Society and of the Medical Society of Virginia. His wife and one child survive him.

Locksley P. Hening,

A member of the senior class of the Medical College of Virginia, was fatally injured by lightning on August 8 and died on August 14. He was convalescing from injuries received in a saw mill accident several weeks prior to this and it is stated that death was due to hemorrhages from the reopening of old wounds. Mr. Hening was 24 years of age and a son of Dr. Thomas S. Hening, of Jefferson, Va.

Dr. Stephen Smith,

A noted physician and the founder of the American Public Health Association, died August 26 at Montour Falls, near Elmira, N. Y. He was 99 years of age. At the last meeting of the American Public Health Association, he was tendered a banquet in recognition of his work in public health.

Dr. Alexander Righter Craig.

As we go to press, we learn with regret of the death of Dr. Craig, who has been secretary of the American Medical Association, for a number of years, and was one of the best known men in the profession in this country. His death occurred on the night of Steptember 2nd, at Port Deposit, Maryland.

Fifty-third Annual Session, Norfolk, Va., Oct. 31-Nov. 3, 1922

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 7.
WHOLE No. 844.

RICHMOND, VA., OCTOBER, 1922

20 CENTS A COPY
$2.00 A YEAR

Original Communications

REPORT OF A CASE OF ECTOPIC KIDNEY.*

By ROBERT C. BRYAN, M. D., F. A. C. S., Richmond, Va.

Mrs. E. D. W., 23, M. Nullip.

Sensation of weight in right iliac region with pain in right limb, being referred to the ankle.

Parents living. Father had frequent attacks of gall stone colic. Mother has some kind of abdominal tumor. Four brothers, two living, good health. Two brothers dead, one during childhood, other died suddenly at age of 26, probably heart trouble. No history of cancer, T. B., some history of insanity on mother's side, no further history of cardiac trouble or paralysis.

Usual diseases of childhood. Influenza in 1918. No typhoid diphtheria, pneumonia or malaria. General health as a rule, good.

Appendectomy 6 years ago. Laparotomy February, 1922; attempted nephrectomy March, 1922.

Appetite good, bowels regular, no nausea, no vomiting, no diarrhea, no attacks of indigestion.

No dysuria, no polyuria or nocturia.

Menstrual periods began at age of 13 years. During first year was very irregular, but afterwards was regular and normal.

Married nine months; one abortion (one month) brought on by auto accident, no leucorrhea.

Housewife. No loss of weight, no insomnia, moderate use of tea.

Patient has always been conscious of feeling of discomfort and sensation of weight in right side, with pain being referred down right limb, extending to ankle. About six years ago patient began to have acute attacks of pain in right side, which would last from 24 to 36 hours, associated with some nausea; no vomiting and, on several occasions, would require hypodermic to relieve pain. Neither during nor after attack was there any frequency of urination—but it always seemed, if patient was required to hold her water for an unreasonable length of time, it would aggravate one of these attacks. These attacks began to come on more frequently and severer in type and she was told she had appendicitis, for which she was operated on in 1917. Patient was benefited for short time, but several months later began to have similar attacks as before operation. In February, 1922, submitted to exploratory laparotomy, at which time a pelvic condition and ectopic kidney were found, but nothing was done.

Physical Examination.—Patient lying comfortable in bed, composed and apparently not seriously sick or suffering. Answers questions readily.

Skin and mucous membrane, negative.

Head, negative.

Eyes, reaction O. K. and equal.

Nose and ears, apparently negative.

Throat congested. Tonsils deep red in color in crypts, no expressed secretion. Tongue protrudes in mid-line and covered with whiteish coat, slightly furred. Teeth fair, several missing, numerous gold crowns. Gums healthy.

Glandular.—Posterior and anterior cervical palpable. Otherwise negative.

Thorax and lungs, negative.

Heart.—Apex beat just within midclavicular line at fifth interspace. Sounds of fair quality, no murmur is heard, slight accentuation of second pulmonic sound. B. P., S. 118, D., 68, pulse regular, good volume, rate 86.

Abdomen.—Two scars present from previous operation. No visible masses. Abdomen soft and flat. Spleen and liver not palpable. A mass felt in right iliac region extending low down in pelvis, which is tender on deep pressure. Otherwise negative.

*Reported before the Richmond Surgical Society, June 8, 1922.

Extremities, negative.

Reflexes, normal.

February 27, 1922, 4 c.c. of a 4/10% solution of indigo-carmine injected into the buttocks at 3:22 P. M., appears in fifteen minutes on the left. At the end of twenty-eight minutes catheter removed and no indigo-carmine appears on the right side. 70 c.c. of a 25 % solution of sodium bromide injected in pelvis of right kidney and pyelogram taken. (See picture.)

X-Ray report.—X-ray of right kidney and pyelogram shows an enormously dilated pelvis, located below the brim of the pelvis and lying a little more to the right than to the left but extending over on the left side.

Operation.—March 3, 1922. General anesthetic, ether, right rectus incision. Perito-

The large shadow below the brim of the pelvis and to the outer side of the sacrum is the hydronephrotic sac containing 70 c.c.

neum incised and an ectopic kidney, with a hydronephrotic sac is found, the organ being placed in the concavity of the sacrum. The sac was incised and swabbed out and followed back to the kidney, which was densely adherent and could not be liberated. The patient doing very badly. The sac was brought up and sewn to the skin and a drain put at the lower angle outside the sac into the pelvis to drain the cul-de-sac. Tissues brought together with catgut No. 2, silkworm gut through the skin.

Radium.—On March 8th, 60 mgr. of radium was inserted and allowed to remain in situ twenty-four hours, and on March 18th, 75 mgr. was inserted and left in for twenty-four hours. These applications of radium were made with the hope of reducing the activity of the kidney but with no appreciable results upon the drainage, the dressings being changed about every three hours.

Dr. Hugh Young's comments on the case. "I have read with great interest your account of your case of ectopic kidney with hydronephrosis. Am sorry to say I know of no method which you might employ to stop the renal function. Radium, I feel sure, would not be effective. We have used it a good deal in hypertrophy of the prostate and it does not reduce the lobes or destroy the tissues to any great extent unless it is buried into it and this, I imagine, would be difficult for you to do. Perhaps your patient will get stronger and it will then be possible for you to carry out the operation of nephrectomy. Will be glad to hear what you do."

Operation.—May 17, 1922. General anesthetic, ether and nitrous oxide, respired carbon dioxide, by Dr. Morgan of Chicago, assisted by Drs. Trice and Creekmur. Incision is made vertically downward about the middle of right rectus between the two former scars. Intestines are found attached to both intra-peritoneal scars and are stripped away with considerable difficulty from their many adhesions, and strong white bands running between intestines at various points are cut with the scissors and not tied. The intestines are packed off with large sheets to the left and superiorly, the intestine attached about the old fistulous tract on the right cannot be dislodged. The hydronephrotic sac under the parietal peritoneum was now well evident, the peritoneum incised vertically, the finger inserted and stripping begun. At various points the peritoneum was most adherent and could not be stripped loose satisfactorily. This stripping was carried likewise externally toward the fistulous tract which could not be liberated from its attachment to the skin and muscles. The kidney substance was found well in the pelvis and liberated with the finger, there being many small bleeding points which were not tied but stopped oozing when packed with gauze. At about this juncture the pelvis burst extravasating urine into the abdominal cavity, which was swabbed out. The ureter was cut and it was necessary to resect the pelvis about its attachment to the abdominal wall so that the kidney and larger part of the pelvis was removed. A large tube carrying a wick of iodoform gauze was placed in the parietal peritoneum deep down into the sacrum which held the original kidney, peritoneum sewn vertically upward, the visceral peritoneum sewn with catgut No. 2 and likewise continuous catgut through the fascia, interrupted silkworm gut through the skin. Duration of operation fifty minutes. Dr. Morgan administered 1 c.c. of pituitrin at the beginning of the operation, the pulse being very rapid, around 170, as he claimed to stabilize the heart rate, there being shortly afterward a dropping of the pulse which ran throughout the rest of the operation between 130-140. Patient stood the operation very well and was returned to bed in good condition.

Dr. S. W. Budd's report on kidney.—*Gross*: The kidney measures in length 10 cm., in breadth 5 cm., thickness 1½ cm., depth of cortex and medullary portion 1 cm. The surface is irregular and granular in appearance. The prominent areas are made up of renal parenchyma that has been squeezed outward by contracting scar bands lying in between. The nodules vary in size from a few mms. to a cm. in diameter and the depressed areas are several mms. in width. The cortex and medullary portions are made out with a great deal of difficulty. The markings of the kidney (medullary rays, etc.) are much disturbed and it is impossible to identify them. The pelvis of the kidney is enlarged and the wall of the pelvis is about 1 cm. in thickness.

Microscopic: The microscopic examination of the cortex shows two distinct forms of tissue, one occurring in the nodule and the continuation of the nodules into the cortex, the other in the depressed areas and the continuation of the depressed areas into the cortex.

The nodules are composed of renal tissue showing most pronounced glomerulo-tubular degeneration. There is a little increase in the stroma and this increase is chiefly located about Bowman's capsules. Many of the glomeruli have been replaced by hyalin material and many of the tubules show a complete sloughing of the epithelium. The epithelium tubules show many parenchymatous granules, a few hyalin droplets, and there is some hyalin degeneration present in the stroma between the tubules. The zones between the nodules are made up of connective tissue that extends from the capsule to the pelvis of the kidney. In these zones there is little evidence of any renal tissue and what there is present is surrounded by a dense scar tissue and shows the same degeneration as mentioned in the above. There is a marked small cell infiltration and in some areas quite a collection of the small round cells present in the fibrous tissue zone.

The blood vessels show a hyalin degeneration most noticeable in the sub-intimal space and this degeneration also extends to the media. The lumen of the vessels is also encroached upon and made smaller by the thickening of the blood vessel wall.

The medullary portion is made up of a dense fibrous tissue and of a few tubules. These tubules are undergoing a cloudy swelling just as in the cortex. In some areas there is a tendency on the part of the tubules to regenerate. The connective tissue in between the tubules is very dense and in some places hyaline material is present. There are very few blood vessels present in this region.

The pelvis is composed chiefly of a new form of connective tissue. The epithelial lining of the pelvis has been entirely denuded and replaced by an inflammatory membrane. In the wall of the pelvis there are many small round cells and in certain zones there are small microscopic abscesses. There is much fibrin and blood present in the pelvic wall, and like the medullary portion, there is a complete absence of capillaries and small vessels.

Diagnosis.—Acute and sub-acute pyelitis. Acute diffuse nephritis.

Dr. Budd further states that this report would seem to indicate a definite response to the radium therapy as seen by the following:

1. Acute exacerbation of chronic pyelitis.
2. Absence of blood vessels in pelvis.
3. Absence of blood vessels in medullary substance of kidney.
4. Sub-acute inflammation and fibrosis of this region.

May 31, 1922. Renal efficiency test, left kidney, 60%, urinalysis negative.

June 7, 1922. Patient discharged in good condition.

Grace Hospital.

DIFFERENTIATION BETWEEN MONGOLISM AND CRETINISM.

By NOBLE P. BARNES, M. D., F. A. C. P., Washington, D. C.

The recognition and study of cretinism has added an interesting chapter to medical history.

Description of endemic cases can be found in the medical literature of the sixteenth century where they are confused and associated with other forms of idiocy. In the nineteenth century, there was popular recognition of these cases and the localities in which they were found. In "The Country Doctor," Balzac, the Shakespeare of France, gives in his masterly way a classical word picture of "a creature that had neither the graces of the animal nor the privileges of the man, that had neither reason nor instinct—a livid face in which thought had never shone, in short, the entirely animal face of an old cretin."

In 1800, Dr. Barton, of the University of Pennsylvania, published his "Memoirs concerning the goitre as it prevails in different parts of North America." He stated that "cretinism is undoubtedly rare in North America" and did not believe that goitre and idiotism are necessarily connected or associated with each other. About the same time Patterson suggested that cretinism was a disease analogous to, if not identical with myxedema; that in both there was an absence or deficient action of the thyroid gland.

In 1850 Curling stated that in cretins the thyroid gland is either absent or diseased. In 1871 Dr. Hilton Fagge applied the name sporadic cretinism to myxedema of infants and children, describing them as imbecile dwarfs. The subject received renewed attention in 1873 when Sir William Gull read before the Clinical Society of London his paper entitled "A Cretinoid State Supervening in Adult Life of Women" and a second paper in 1878 on "Cretinoid Change."

The presentation of these papers resulted in the appointing of a committee to investigate and classify the subject. Its Chairman, Dr.

Ord, in 1888 reported 109 cases of myxedema and concluded the report of the committee as follows: "That there is a strong evidence that myxedema, sporadic cretinism, endonic cretinism, cachexia strumipriva and the operative myxedema of animals are severally, species of one genus."

Murray[1] (*British Med. Jour.*, March, 13, 1920, p. 359) claims to be the first to use thyroid extract in the treatment of myxedema in 1891. The patient, a woman of 46 years, was given the treatment first, hypodermically, later by month. By the regular and continued use of the thyroid she remained in good health though she had previously reached an advanced stage of myxedema. She died in her seventy-fourth year.

In this country the first case of sporadic cretinism was reported by Jacobi in 1879. Osler collected from every available source and reported eleven cases in 1893. In 1897 by more extensive search and assistance from interested colleagues, he presented a report of

Fig. 1. Three negro cretins (myxedematous idots). Edna, 3 years; 5 months; James, 5 years, 4 months; Leo, 1 year, 6 months. Photograph taken December 4, 1899, one month after instituting treatment.

sixty cases collected in the United States and Canada. In 1898 McPhedrau reported seventeen additional cases found in Ontario. Other men added numbers to this list until Gordon[2] (Murray B. Gordon. *Endocrinology* Vol. VI. No. 2, March 1. 1922) in 1921 presented a grand total of 340 cases. There are perhaps as many cases that have not been included in this list. Three of my own reported in 1899 I mention not so much to increase the numbers, but because the three were negroes, the condition being exceedingly rare in the colored race. (Fig. 1.)

The Mongolian, Kalmuc or Tartar type of feeble-mindedness, was first thus designated by J. D. Langdon Down, in Clinical Lectures and Reports, London Hospital, 1866, on account of their facial resemblance to the Mongolian physiognomy.

Fig. 2. T. McD. Mongolid. 4 years, 3 months.

The first case (Fig. 2.) of this type came to my attention in 1903. Not being familiar with previous description and finding no reference to the condition in the text books at my command including all the recent publications, I decided that I was dealing with a new and uncommon glandular disturbance. Ten years later the medical literature began to mention these cases and the last decade has brought many of them to the search light of scientific investigation.

The frequency of Mongolism in this country is a matter of conjecture. H. H. Goddard in his Reference Handbook of the Medical Sciences in 1916 estimated the number of feeble-minded in the United States as between 200,000 or 300,000. Institutional statistics show from two to five per cent belonging to Mongolian type. That would give in gross

figures, 15,000 cases of Mongoloid idiots in this country six years ago. With the increase of endocrine disturbances that has become apparent in the last few years, this Mongolism, that

Fig. 3. T. McD., at the age of 5 years. Died in his twenty-second year. Tubercular meningitis.

Fig. 4. Mongoloid, 6 months old. Died at 22 months. Could not hold up his head or understand anything. Cretin, 30 months old. From L. E. Holt.

may be traced to endocrine exhaustion in the parents, would naturally become more frequent. But statistics can in no way give the number of Mongoloids born, for their usual physical

Fig. 5. Radiogram of nine-month-old Mongoloid. Note thin light bones, ball shaped heart, small chest, large abdomen and distended colon.

condition constitutes a predisposing factor to rapidly fatal issue in acute infections. The hyperplastic lymphoid tissue permits the easy invasion of provocative micro-organisms. The inability to digest and assimilate the proper amount and kind of food further weakens the inherited imperfections and those surviving early infections frequently succumb to tuberculosis. Pardee[3] recently reported two cases of Mongolian idiocy in one family. More interesting and suggestive are the reports of this condition in one of twin births by Newman[4], Hjorth[5], McKee[6], Shuttleworth[7], Swansberg and Haynes[8] and McLean[9].

As recent as 1914, A. F. Tredgold in Mental Deficiency, Ed. 2, page 211, states there are no physical signs, pathognomonic of the condition with the possible exception of the tongue; that other types of feeble-mindedness present all the anomalies seen in the Mongoloid.

To my mind, Mongolism is distinctive, and interest apart from the etiological factors and therapeutic measures must, if differentiation need be made, center in distinguishing this type from myxedematous idiocy, with which it may be associated and is doubtless often confounded.

Fig. 6. Radiagram of nine-month-old infant, given here for comparison with figure 5. This infant had several attacks of thymic tracheostenosis. Note hyperlastic thymus and its relation with the mediastinal organs.

Radiagram of hand of five-month-old Mongoloid, showing normal epiphyseal nuclei.

Endocrine disturbance in the parent is probably a factor in the development of both cretinism and mongolism. The former is often associated with thyroid disturbances in the mother and the latter most frequently are the offspring of old mothers or those showing endocrine exhaustion Indeed, it is quite well recognized that pregnancy in a woman affected with thyroid disturbance, unless counterbalanced by endocrine treatment, will affect the development of the fetus, resulting in some form of athyreosis.

The general characteristics given here in paralled columns will, I hope, make clear the differentiation between mongolism and cretinism.

	Mongolism	Cretinism
Frequency:	20,000 estimated	343 collected
Sex:	More frequent in boys	More frequent in females, 66%.
Time of recognition:	At birth, complete in four months	Rarely before the fourth month, complete in two years.
Physiognomy:	Mongolian type	Bestial, dull, bull dog type.
Skin:	In newborn, pale, soft, velvety. Later, dry and eczematous	Thick, yellowish, loose, wrinkled. Mucoid edema of face, neck, hands and feet.
Hair:	Straight, thin, fine and usually dark	Straight, coarse, brittle, generally light.
Nails:	Light and shapely	Brittle and slow of growth.
Head:	Brachycephalic. Often flattened posteriorly	Broad, flat, heavy skull.
	Sutures small	Synosteosis late, fontanel open.
	Eyelids, slit shape, oblique, epicanthus	Eyelids thickened, eyes wide apart.
	Nose, small, flat and wide	Flat, broad at base, mucous membrane thick.
	Lips, usually open and thin	Large, thick and separated by tongue.
	Tongue, often protruding, normal in size	Large, thick, protruding. Salivation.
	Dentition, near normal	Delayed, often not a tooth at 2 years.
	Ears, lobes misshapen, often monkey type	Irregular and bad.
Body:	Dwarfed, short extremities	Dwarfed and squatty, stunted, stubby.
	Chest, small, high diaphragm	Stature, emphasised in older cases.
	Abdomen, large, balloon belly, frequently umbilical hernia	Similar.
	Spine, flexible, but erect in older children	Lordosis and sometimes lateral curvature.
Extremities:	Bones, small and light	Short, heavy, stubby; resembles rickets.
Radiogram shows:	Epiphyseal nuclei present	Epiphyseal nuclei absent. Chondrohypoplasia.
	Thin, light bones but normal epiphyseal ossification	Aplasia of bony skeleton. No epiphyseal or enchondrial proliferation.
Hands:	Small and shapely, short second phalanx in little finger	Short and stocky, fingers swollen.

FEET: Large cleft between great and second toe....	Short, stubby and deformed. Broad and swollen.
JOINTS: Hypermobility extreme.....	Hypermobile.
MUSCLES: Weak. Reflexes normal. Plantar reflex exaggerated	Weak. Reflexes sluggish. Indolent action. Co-ordination delayed.
DEVELOPMENT: Sits alone at two years	In many cases the backwardness is even greater.
Walks at five years with shuffling gait.....	Rarely walks alone before the sixth year and always with a clumsy waddle, like a hippopotamus.
MENTALITY: At birth apathetic, sleeping	Dull, sluggish, stupid.
Later bright, active, imitative, dancing, music loving, cheerful idiots	Seldom smiles, grunts, hoarse brute like voice, dirty, good natured idiots.
RESPIRATION: Adenoidal type	Snoring and snorting.
CIRCULATION: Often weak due to cardiac anomalies..	Weak and sluggish, left ventricle often enlarged.
TEMPERATURE: Usually normal	Always subnormal.
PERSPIRATION: Normal	Rare.
BOWELS: Constipated	Constipated.
KIDNEYS: Frequent micturition; urine of a low specific gravity	Frequent micturition; urine often contains albumin and casts. Later atheromatous and amyloid degeneration of kidneys.
BLOOD: Near normal	Diminished reds and hemoglobin.
BASAL METABOLISM: Near normal	Extremely low.
SEXUAL INSTINCT: Lessened. Genital organs undeveloped	Generally absent. Organs hypoplastic.
COMPLICATIONS: Adenoids, tonsils, heart lesions. Easy victim to infections.....	All senses dulled. Lymphatism.
PATHOGENESIS: Endocrin disturbance, principally of the thymus, pituitary and thyroid	Absence or destruction of thyroid.
THYROID THERAPY: Slight improvement when associated with hypothyroidism	Rapid improvement of all symptoms.

The Arlington.

REFERENCES

1. Murray: British Med. Journal, March 13, 1920, p. 359.
2. Gordon, Murray B.: Endocrinology, Vol. VI., No. 2, March 1, 1922.
3. Pardee, I. J.: J. A. M. A., 74, 94, Jan. 10, 1920.
4. Newman, H.: Berlin Klin Wchnschr. 30:210.
5. Hjorth, Bodil: Nyt. Tidss Krift for Abnormvaesenst., No. 9, 1906.
6. McKee, J. H.: J. Psycho-Asthenics, 13:43, 1908-1909.
7. Shuttleworth, G. E.: Brit. Med. J., 2. 661, Sept. 1909.
8. Swanberg, Harold & Haynes, H. A.: Arch. Neurolgy and Psychiatry, June 1919, Vol. 11, p. 717-725.
9. McLean, Stanford: J. A. M. A., Jan. 7, 1922.

THE RICHMOND PELVIS.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

I do not come to you with any invidious comparisons, as the title of my paper might possibly suggest. The term "Richmond Pelvis" was chosen as a matter of convenience and, as used in this paper, needs defining. It does not mean a made-in-Richmond product in the strict sense of the term, but merely the pelvis that one meets with in doing obstetrics in Richmond. The measurements that we have found would probably apply equally well in Norfolk or any other place of similar climatic, racial and social conditions.

The early history of pelvimetry is coincident with the development of obstetrics. Practically all the great names in obstetrics have been associated in one way or another with the advances of our knowledge of the pelvis. Herbert Spencer[1], in his Harverian lecture, "William Harvey, Obstetric Physician and Gynecologist," gives a good picture of the times and conditions at Padua before and at the time when Harvey was a student there. The outstanding figure in the University was Vesalius, who was the first to describe the pelvis. His pupil, Arantius, was the first to describe a deformed pelvis. At a little later date there was Scipione Mercurio, whose book, La Comare (1596) appeared the year before Harvey entered the University. Mercurio was the first author to mention contracted pelvis as an indication for cesarean section. He also pictures the "hanging legs" position, what we now call the Walcher position, for delivery in case of contracted pelvis.

Vesalius (1515-1562) and Arantius (1530-1589) were anatomists and their work had no influence upon obstetrics outside of Padua. According to Williams[2], even Ambroise Pare (1510-1590) taught the old idea that the pubic bones separated during labor, and Mauriceau (1637-1709), who was the first man[3] to limit his work to obstetrics, had observed only

*Read before the Norfolk County Medical Society, May 22, 1922.

two cases of contracted pelvis in his very large experience. Deventer, Dionis, Smellie, and others studied and classified dried pelves from an obstetrical standpoint but, before Baudelocque's time (1746-1810), no studies were made upon the living woman. Michaelis studied and carefully measured the pelves in 1,000 consecutive labor cases at Kiel. He found 72 to have a conjugata vera of less than 9 centimeters. Litzman, Michaelis' successor, continued his work and adopted the criteria that is used today in determining a contraction of the inlet. Klien resolved the outlet into its two component planes and devised a means of obtaining their dimensions, and to Williams[3] belongs the credit of emphasizing the importance of outlet pelvimetry, and of showing the frequency of funnel pelves.

Until comparatively recently, the pelvis has been studied individually, and our chief concern has been to determine the presence or absence of deformity, and the nature of the deformity, if present. The etiological influence of posture, developmental defects, and certain diseases have been thoroughly studied by Tarnier, Budin, Schauta and others. The idea of the influence of race and climate is of more recent date. Riggs[4] studied 1500 pelves in Baltimore. The series was about equally divided between whites and negroes. He found the negro pelvis to be distinctly smaller, but that the smaller pelvis was more than compensated for by the smallness and malleability of the head of the negro infant. Das[5] tells me that the Hindoo pelvis is much smaller than the European. In his textbook, he gives the following table to which I have added the measurements of the American negro, according to Riggs, and the Chinese, as given by Garner:—

	SP. I.	CR. I.	BI. T.	D. B.	
British	25	27.5	30	20	
French	24	28	32	20	
American	26	29	32	21	
German	26	29	32	20	
Bengali	21	24.8	27	17.5	
Madrassi	21.5	24.8	28.2	18.4	
Japanese	23.75	26.5	28	18.5	
American negro	24	26	30	19.2	(Riggs)
Chinese	23.98	25.35	—	18.27	(Garner

Fortunately for the Hindoo women, their babies are small, averaging 5 lbs. 10 oz. Acosta-Sison[6] and Calderon have published the measurements upon Filipina pelves, and compared their findings with the American white and negro pelvis. According to these authors the normal Filipina pelvis is similar to the generally contracted pelvis of the white American. Emmons[7] has studied museum specimens of the American Indian, and worked out an index for the inlet and also one for the outlet. Recently, Adair[8] has published a study of French and Minnesota pelves based upon measurements that he himself had made. He used the newer statistical methods in the comparison of the two types.

Thus we see that the pelvis was of interest first to anatomists to whom it presented problems of structure, development, and even description, of the first magnitude: secondly, it interested obstetricians with problems of the mechanism of labor and of dystocia: and thirdly, it is of extreme interest to anthropologists. Emmons shows how interwoven are the obstetric and the anthropogenetic principles. "The pelvis has carried on the function of child-bearing probably ever since a pelvis has existed. The function of weight-bearing, however, by the recent assumption of the upright attitude, was transferred from four legs to the hind two. The pelvis, now become a very important girder in the bridge structure, thus came to bear the weight not only of the fore part of the body but also of the head, and this head has since increased considerably in weight. With this large increase in the weight to be carried by the pelvis has come a marked change in the direction in which that weight is applied. These three factors, the change in direction, the extra weight, and the shortness in time since this change has taken place, would lead us to expect changes of form of considerable importance and with them variations, the frequent accompaniment of recent change, in those parts to which this function applies. The typical 'male' pelvis, free from the function of child-bearing, is built strong, high, close-knit, thick-boned, with a small cavity, the type best adapted to bearing weight. The typical 'female' pelvis is on the other hand, of lighter build, lower, more open, and with a roomy cavity, better adapted to child-bearing. The newly-acquired function of weight-bearing, however, tends to mould the female pelvis toward the male type, while the child-bearing function resists such changes in so far as they tend to interfere with its long-established and most vital function of child-bearing." John T. Williams[9] has recently called attention to the existence of these two types in the normal female pelvis. In 300 fe-

male pelves the proportion of the "male" to the "female" type was 26.4% to 73.6%.

The material used for the present study was obtained from the Medical College of Virginia Dispensary—1023 cases, the Instructive Visiting Nurses' Prenatal Clinic—185 cases, and from my private records—904 cases. The measurements of the patients at the Medical College Dispensary were made by Drs. Baughman, Bear and myself. The measurements at the I. V. N. A. Clinic and on my private patients are entirely my work. The material considered as a whole is fairly equally divided between the two races, white and negro. When

TABLE I.

Average Pelvic Measurements, Showing Sources of Material.

	Sp. I.	Cr. I.	Bi. T.	D. B.	Ob. D.	Ob. L.	Arch	Bi. T.	Ant. Sag.	Post. Sag.	S. P.	Symph.
Total	23.12 (2110)	26.55 (2108)	31.11 (2089)	20.13 (2090)	22.11 (2011)	22.15 (2010)	65.36° (483)	8.96 (1794)	6.51 (1680)	7.68 (1672)	11.62 (1691)	5.97 (1415)
Private cases	23.90 (902)	27.89 (902)	31.57 (890)	20.51 (895)	22.68 (829)	22.57 (832)	64.19° (221)	8.80 (661)	6.48 (561)	7.44 (557)	11.21 (603)	6.14 (455)
I. V. N. A. Clinic	22.17 (185)	26.27 (185)	30.94 (183)	20.14 (183)	21.87 (183)	21.74 (182)	65.82° (137)	8.85 (183)	6.15 (181)	7.90 (180)	11.00 (176)	6.00 (162)
Med. Col. of Va. Clinic	22.52 (1023)	25.42 (1021)	30.72 (1016)	19.78 (1012)	21.79 (999)	21.87 (996)	66.91° (125)	9.09 (950)	6.60 (938)	7.79 (935)	(12.01 (912)	5.86 (798)

TABLE II.

Average Pelvic Measurements of White and Colored Races.

	Sp. I.	Cr. I.	Bi. T.	D. B.	Ob.D.	Ob. L.	Arch	Bi. T.	Ant.Sag.	Post.Sag	S. P.	Symph.
Total	23.12	26.55	31.11	20.13	22.11	22.15	65.36°	8.96	6.51	7.68	11.62	5.97
White	23.93	27.92	31.64	20.51	22.64	22.64	64.67	8.85	6.44	7.49	11.27	6.10
Colored	22.40	25.32	30.63	19.78	21.67	21.72	66.11	9.04	6.55	7.81	11.87	5.88

TABLE III.

Interspinous (Sp. I.)

	WHITE					NEGRO				
		Deviations					Deviations			
Measurements	Frequencies	From Assumed Av. 23 c.m. —	+	Squared	Squared Multiplied by Frequencies	Frequencies	From Assumed Av. 23 c.m. —	+	Squared	Squared Multiplied by Frequencies
Total	992				3954	1116				4580
16						1	7		49	49
17						1	6		36	36
18	1	5		25	25	12	5		25	300
19	10	4		16	160	46	4		16	736
20	41	3		9	369	135	3		9	1215
21	66	2		2	132	205	2		4	820
22	143	1		1	143	237	1		1	237
23	185					175				
24	196		1	1	196	140		1	1	140
25	184		2	4	736	121		2	4	484
26	100		3	9	900	32		3	9	288
27	46		4	16	736	7		4	16	112
28	16		5	25	400	2		5	25	50
29	3		6	36	108					
30	1		7	49	49	1		7	49	49
31						1		8	64	64

Arithmetical average (from Table No. 2)	23.93	22.40
Median lies in group	24	22
Mode	24	22
Standard Deviation*	1.86*	1.87*
Probable error	±0.04	±0.04
Coefficient of variability	7.77	8.35

*S. D. is obtained in the following manner:—The square of the average error occasioned by using an assumed average (so as to get simple numbers to square) is multiplied by the total number of frequencies. The product is subtracted from the total column 6 (or column 11). This gives the correct deviation squared, which when divided by the total frequencies is the square of the standard deviation.

TABLE IV.

Intercristal (Cr. I.)

Measurements	WHITE Frequencies	Deviations From Assumed Av. 27 c.m. —	+	Squared	Squared Multiplied by Frequencies	NEGRO Frequencies	Deviations From Assumed Av. 27 c.m. —	+	Squared	Squared Multiplied by Frequencies
Total	991				2852	1117				8359
18						1	9		81	81
19						8	8		64	512
20						15	7		49	735
21						33	6		36	1188
22	3	5		25	75	43	5		25	1075
23	10	4		16	160	106	4		16	1696
24	12	3		9	108	161	3		9	1449
25	54	2		4	216	233	2		4	932
26	117	1		1	117	206	1		1	206
27	236					192				
28	240		1	1	240	73		1	1	73
29	186		2	4	744	32		2	4	128
30	87		3	9	783	8		3	9	72
31	35		4	16	64	3		4	16	48
32	7		5	25	175					
33	2		6	36	72	1		6	36	36
34	2		7	49	98					
35						2		8	64	128

Arithmetical average (Table No. 2)	27.92	25.32
Median lies in group	28	25
Mode	28	25
Standard Deviation	1.51	2.09
Probable error	± 0.032	± 0.042
Coefficient of Variability	5.41	8.25

TABLE V.

Bitrocanteric (Bi. T.)

Measurements	WHITE Frequencies	Deviations From Assumed Av. 31 c.m. —	+	Squared	Squared Multiplied by Frequencies	NEGRO Frequencies	Deviations From Assumed Av. 31 c.m. —	+	Squared	Squared Multiplied by Frequences
Total	982				3165	1107				4664
24						1	7		49	49
25						4	6		36	144
26						14	5		25	350
27	7	4		16	112	47	4		16	752
28	26	3		9	234	79	3		9	711
29	65	2		2	130	123	2		4	492
30	154	1		1	154	320	1		1	320
31	244					228				
32	247		1	1	247	147		1	1	147
33	126		2	4	504	73		2	4	292
34	61		3	9	549	24		3	9	216
35	35		4	16	560	29		4	16	464
36	8		5	25	200	12		5	25	300
37	2		6	36	72	2		6	36	72
38	3		7	49	147	1		7	49	49
39	4		8	64	256	1		8	64	64
42						2		11	121	242

Arithmetical Average (Table No. 2)	31.64	30.63
Median lies in group	31	30
Mode	32	30
Standard Deviation	1.71	2.00
Probable Error	± 0.036	± 0.04
Coefficient of Variability	5.40	6.53

TABLE VI.

Baudelocque's Diameter (D. B.)

Measurements	WHITE Frequencies	Deviations From Assumed Av. 20 c.m. —	+	Squared	Squared Multiplied by Frequencies	NEGRO Frequencies	Deviations From Assumed Av. 20 c.m. —	+	Squared	Squared Multiplied by Frequencies
Total	984				1833	1106				2003
14						1	6		36	36
15						1	5		25	25
16	1	4		16	16	11	4		16	176
17	21	3		9	189	55	3		9	495
18	59	2		4	236	164	2		2	328
19	176	1		1	176	231	1		1	231
20	307					355				
21	281		1	1	281	224		1	1	224
22	95		2	4	380	41		2	4	164
23	28		3	9	252	13		3	9	117
24	12		4	16	192	6		4	16	96
25	3		5	25	75	3		5	25	75
26	1		6	36	36	1		6	36	36

Arithmetical Average (From Table No. 2)	20.51	19.78
Median lies in group	20	20
Mode	20	20
Standard Deviation	1.34	1.29
Probable Error	± 0.029	± 0.026
Coefficient of Variability	6.53	6.52

TABLE VII

Angle of Pubic Arch. Measured in Degrees of a Circle.

Measurements	WHITE Frequencies	Deviations From Assumed Av. 65.5° —	+	Squared	Squared Multiplied by Frequencies	NEGRO Frequencies	Deviations From Assumed Av. 65.5° —	+	Squared	Squared Multiplied by Frequencies
Total	251				9159	232				12398
50° to 54°	2	13		169	338	3	13		169	507
55° to 59°	22	8		64	1408	24	8		64	1536
60° to 64°	87	3		9	783	59	3		9	531
65° to 69°	70		2	4	280	72		2	4	288
70° to 74°	51		7	49	2499	45		7	49	2205
75° to 79°	14		12	144	2016	16		12	144	2304
80° to 84°	3		17	289	867	9		17	289	2601
85° to 89°	2		22	484	968	2		22	484	968
90° to 94°						2		27	729	1458

Arithmetical Average (From Table No. 2)	64.67°	66.11°
Median lies in group	65° to 69°	65° to 69°
Mode	60° to 64°	65° to 69°
Standard Deviation	5.92	7.27
Probable Error	± 0.22	± 0.32
Coefficient of Variability	9.15	11.00

the same pelvis has been measured more than once, as has happened in a great number of instances, the group of measurements that are the more complete was chosen. The measurements of all dimensions except the pubic arch were made in centimeters, and no attempt was made to measure less than one-fourth of a centimeter. Finer measurements than this are impracticable, and are apt to lead one astray. Acosta-Sison and Calderon made measurements as small as one tenth of a centimeter, and thought they were able to differentiate subtypes that were due to tribal influence. A study of the graphs that they publish, however, shows that the peaks of the sub-types fall either on the centimeter or the half-centimeter marks, and it is likely that the distinctions they have drawn are psychological rather

than anatomical. The pubic arch was measured in degrees of a circle. This I believe is an important check on the measurements of the outlet as are ordinarily taken. Emmons, even with the dried pelvis before him, had difficulty in determining the points on the tuberosities of the ischium from which to measure the transverse diameter of the outlet. He devised a series of circles that varied in diameter by half a centimeter. With these he was able to measure both the bi-ischial and the posterior sagittal diameters. A modification of this "fetal head" method might with profit be adopted for measurements upon the patient. The diagonal conjugate was omitted for the reason that in more than one-half the cases it could not be obtained, and a study of the smaller pelves in which it was readily obtained would give an erroneous impression of the group as a whole. In tables I and II, the fractions of a centimeter were included in determining the arithmetical average, but in all other tables and graphs the fractions were disregarded.

Table I gives the average pelvic measurements arranged according to the source of material. The figures in brackets are the number of instances that enter into the average just

TABLE VIII

Bituberal (Bi. T.)

Measurements	WHITE Frequencies	WHITE Deviations From Assumed Av. 9 c.m. —	WHITE Deviations From Assumed Av. 9 c.m. +	WHITE Squared	WHITE Squared Multiplied by Frequencies	NEGRO Frequencies	NEGRO Deviations From Assumed Av. 9 c.m. —	NEGRO Deviations From Assumed Av. 9 c.m. +	NEGRO Squared	NEGRO Squared Multiplied by Frequencies
Total	767				696	1027				1250
5	1	4		16	16					
6	3	3		9	27	13	3		9	117
7	53	2		4	212	94	2		4	376
8	245	1		1	245	315	1		1	315
9	332					336				
10	112		1	1	112	217		1	1	217
11	21		2	4	84	50		2	4	200
12						1		3	9	9
13						1		4	16	16

Arithmetical Average (Table No. 2)	8.85	9.04
Median lies in group	9	9
Mode	9	9
Standard Deviation	0.85	1.08
Probable Error	+ 0.02	÷ 0.03
Coefficient of Variability	9.60	11.95

TABLE IX

Anterior Sagittal

Measurements	WHITE Frequencies	WHITE Deviations From Assumed Av. 6 c.m. —	WHITE Deviations From Assumed Av. 6 c.m. +	WHITE Squared	WHITE Squared Multiplied by Frequencies	NEGRO Frequencies	NEGRO Deviations From Assumed Av. 6 c.m. —	NEGRO Deviations From Assumed Av. 6 c.m. +	NEGRO Squared	NEGRO Squared Multiplied by Frequencies
Total	671				585	1007				1299
4	14	2		4	56	6	2		4	24
5	225	1		1	225	190	1		1	190
6	306					414				
7	92		1	1	92	260		1	1	260
8	23		2	4	92	90		2	4	360
9	8		3	9	72	41		3	9	369
10	3		4	16	48	6		4	16	96

Arithmetical Average (Table No. 2)	6.44	6.55
Median lies in group	6	6
Mode	6	6
Standard Deviation	0.92	1.06
Probable Error	+ 0.024	÷ 0.022
Coefficient of Variability	14.29	16.18

above. You will see at once that measuring the pubic arch in degrees of a circle is a comparatively recent procedure, there being only 483 pelves upon which this has been done. Table II gives the average measurements classified according to race. It will be noted at once that the usual external measurements are smaller for the negro pelvis. Riggs found this to be true in 1904. My measurements correspond closely with those of Riggs except for the interspinous which is considerably smaller than Riggs' average. The outlet measurements, however, are larger for the negro pelvis. This is probably due to the greater prevalence of rickets in the colored race, although we have not found it so common as it is usually thought to be. The oncoming generation of negroes have better care and better feeding in infancy and childhood than their mothers had. A survey of the public school children shows this to be so, and it is significant that the school that made the best showing in a recent nutri-

TABLE X.

Posterior Sagittal

Measurements	WHITE Frequencies	Deviations From Assumed Av. 7 C.m. —	+	Squared	Squared Multiplied by Frequencie	NEGRO Frequencies	Deviations From Assumed Av. 7 c.m. —	+	Squared	Squared Multiplied by Frequencies
Total	665				708	1006				1639
5	14	2		4	56	13	2		4	52
6	117	1		1	117	123	1		1	123
7	268					317				
8	205		1	1	205	366		1	1	366
9	47		2	4	188	136		2	4	544
10	14		3	9	126	43		3	9	397
11	1		4	16	16	6		4	16	96
12						1		5	25	25
13						1		6	36	36

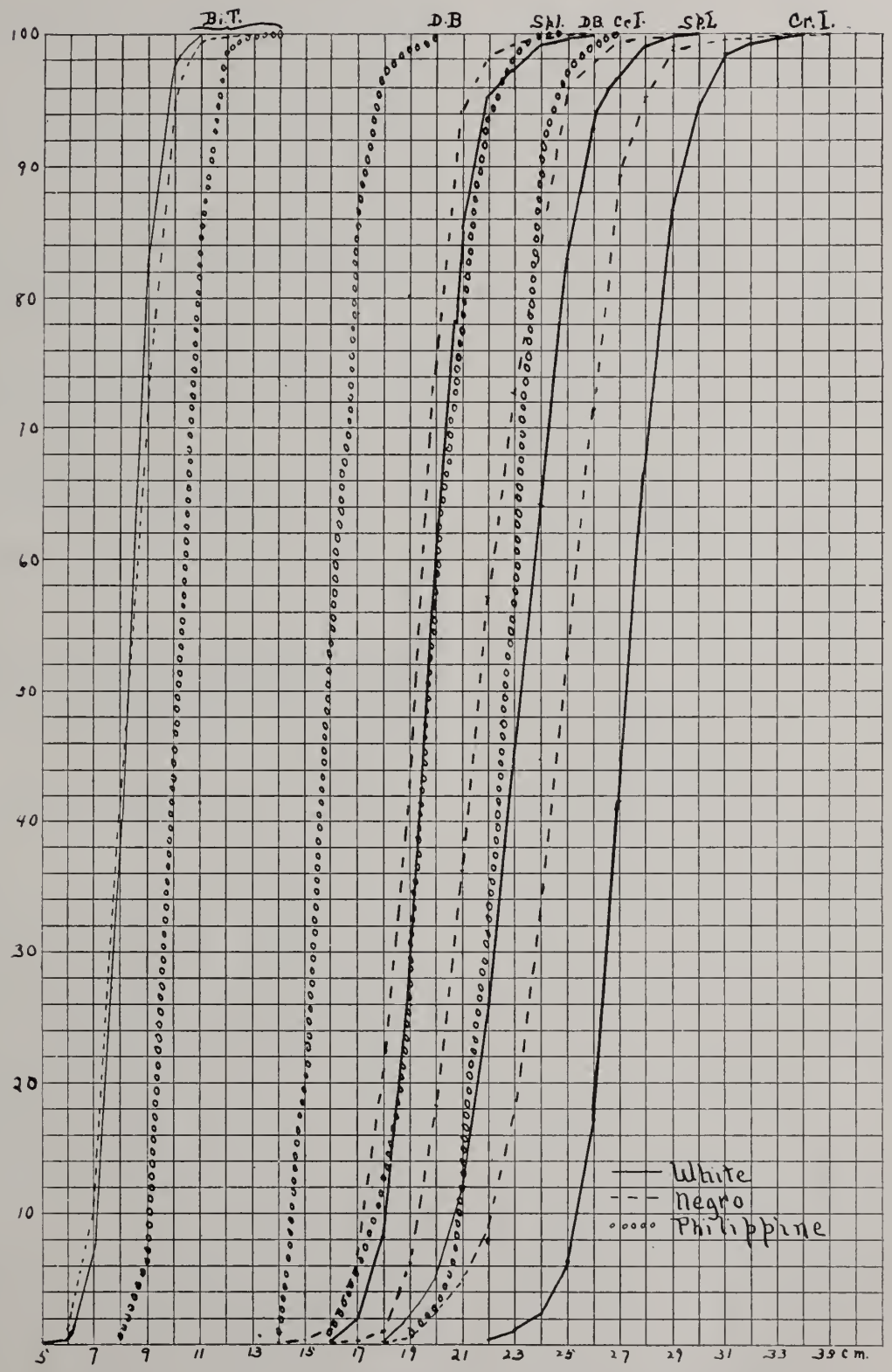
Arithmetical Average (Table No. 2)	7.49	7.81
Median lies in group	7.	8.
Mode	7.	8.
Standard Deviation	0.98	1.09
Probable Error	± 0.038	± 0.034
Coefficient of Variability	13.08	13.96

TABLE XI

Antero-Posterior (S. P.)

Measurements	WHITE Frequenci s	Deviations From Assumed Av. 11 c.m. —	+	Squared	Squared Multiplied by Frequensies	NEGRO Frequencies	Deviations From Assumed Av. 11 c.m. —	+	Squared	Squared Multiplied by Frequencies
Total	710				1161	981				3148
8	13	3		9	117	7	3		9	63
9	35	2		4	140	28	2		4	112
10	225	1		1	225	199	1		1	199
11	286					286				
12	89		1	1	89	172		1	1	172
13	26		2	4	104	119		2	4	476
14	27		3	9	243	104		3	9	936
15	9		4	16	144	55		4	16	880
16	2		5	25	50	9		5	25	225
17						1		6	36	36
18	1		7	49	49	1		7	49	49

Arithmetical Average (Table No. 2.)	11.27	11.87
Median lies in group	11.	11.
Mode	11.	11.
Standard Deviation	1.24	1.62
Probable Error	± 0.047	±0.052
Coefficient of Variability	11.00	13.65



Comparison of pelves of white, negro and Philippine women. Cumulative percentage graphs.

tional study of Richmond school children was a negro school.

Tables No. III to XI give in detail the more important measurements. A comparison with Adair's statistics shows that there is a closer agreement in average, standard deviation and coefficient of variability of the interspinous, intercristal, and intertrochanteric diameters between his American and my white than there is between his American and his French. There is a greater difference in the external conjugate or Baudelocque's diameter. Whether this is due to the personal equation or a difference between the Minnesota and the Virginia pelvis, I can not say. The personal element certainly enters more largely into this measurement than it does in the others. A comparison of the white and negro measurements shows that in all except Baudelocque's diameter, the standard of deviation and the coefficient of variability is much greater for the negro. For Baudelocque's diameter they are practically the same.

Table III gives the cumulative percentage graphs of Filipina pelves constructed from the charts of Acosta-Sison and Calderon in comparison with my measurements for white and negro pelves. It will be noted at once that for the external measurements (D. B.; Sp. I.; and Cr. I.) the Filipina pelvis is much smaller than the white pelvis, while the negro pelvis is only slightly so. The variability of the Filipina measurements is less, as is shown by their curves being more perpendicular. On the other hand, the only outlet measurement available for comparison (Bi. T.) would indicate that the Filipina outlet is much broader transversely, than is the white pelvis, and that the negro is only slightly broader than the white outlet.

Conclusions:

It would seem from these figures that the outlet of the pelves found in Richmond is smaller than one would expect from the measurements given in text books.

The inlet of the negro pelvis is slightly smaller, and the outlet slightly larger than that of the white pelvis.

The variability is greater for the negro pelvis, and especially for the outlet measurements.

References.

1. Spencer, Herbert R.: William Harvey, Obstetric Physician and Gynecologist, Brit. M. J. Oct. 22, 1921, p. 621.

2. Williams, J. Whitridge: Frequency of Contracted Pelves in Baltimore, Bull. Johns Hopkins Hosp. vii: 164, 1896.

Frequency, Aetiology and Practical Significance of Contractions of the Pelvic Outlet, Surg., Gynec. & Obst. viii: 619, 1909.

The Funnel Pelvis, Am. J. Obst. lxiv: 196, 1911.

3. Davis, C. H.: Childbirth, Primitive versus Modern, Surg., Gynec. & Obst. xxxiv. 636, 1922.

4. Riggs, T. F.: A Comparative Study of White and Negro Pelvis, Johns Hopkins Hosp. Rep. xii: 422, 1904.

5. Das, Kedarnath: Hand-Book of Obstetrics, 2nd. Ed. Calcutta, 1918.

6. Acosta-Sison, Honoria, and Calderon, Fernando: Pelvimetry and Cephalometry Among Filipina Women and Newborn Babies, Philippine J. Sc. xiv: 253, 1919.

7. Emmons, Arthur Brewster: A Study of the Variations in the Female Pelvis, Based on Observations Made on 217 Specimens of the American Indian Squaw, Biometrica, ix: 34, 1913.

8. Adair, Fred L.: A Comparison by Statistical Methods of Certain External Pelvic Measurements of French and American Women, Am. J. Obst. & Gynec. ii: 256, 1921.

9. Williams, John T.: Normal Variations in the Type of the Female Pelvis and their Obstetrical Significance, Am. J. Obst. & Gynec. iii: 345, 1922.

10. Secrist, Horace: An Introduction to Statistical Methods, New York, 1918.

11. Garner, M. Emily: Pelvimetry and Cephalometry of Chinese, China Med. J. XXXII: 121, 1918.

1600 *Park Avenue.*

THE REPORT OF A CASE OF RAPID SINUS THROMBOSIS COMPLICATING ACUTE MASTOIDITIS; WITH REMARKS ON INVOLVEMENT OF THE TORCULAR REGION.

By JOHN RANDOLPH PAGE, M. D., New York.

The rapidity with which the lateral sinus became involved in this case leads me to bring it to your attention.

On the eighth of the month a boy eight years of age, from being previously well, developed an earache, temperature of 103°, and two days later signs of beginning pneumonia in his right, lower lobe. The earache was from an acute, purulent otitis media for which a myringotomy was performed within eight hours after its onset. Sputum examination revealed the pneumococcus type 4. The leucocyte count numbered 22,500, with 83% polynuclear neutrophiles. No culture of the middle ear discharge was taken at the time the myringotomy was performed.

During the next three days the signs of pneumonia became more evident, temperature ranged between 100° and 103°, and the discharge from the ear became more profuse and purulent. The drum membrane remained flat,

*Read by invitation before the Virginia Society of Oto-Laryngology and Ophthalmology, at its meeting in Roanoke, April 13, 1922.

the hearing good, the canal open and free from swelling, and tenderness over the mastoid slight.

On the fifteenth of the month, one week from the onset of the infection, the chest signs had practically disappeared and the temperature ranged between 100° and 102½°. The leucocyte count had fallen to 18,600 with 80% polynuclear neutrophiles. The discharge from the ear, however, was profuse, of a characteristic dirty gray color, and showed on culture pneumococcus type 3 (streptococcus mucosus capsulatus).

From the nature of the infection and character of the discharge it was obviously a dangerously involved mastoid, despite the lack of swelling in the canal and tympanum, and the patient's reluctance to admit more than moderate tenderness over the mastoid.

Operation the following day revealed destruction in the mastoid far beyond any we anticipated. Over the vertical limb of the sigmoid, beneath a thin cortex, the inner plate was absent, and behind this, under softened bone, the outer wall of the sinus was eroded and pus exuded from a broken down thrombus in the vein. After excision of the jugular, the infected sinus wall was satisfactorily excised from the eroded area near the knee to the horizontal turn toward the bulb, and the clot was removed, with no bleeding from the bulb. Above, the thrombus extended a centimeter or more beyond the entrance of the superior petrosal sinus into the transverse region and, while it was completely removed and free bleeding obtained from the torcular end, the infected wall at the limit of the clot could not be clearly excised because of the embarrassing hemorrhage from the superior petrosal sinus. So far as could be seen, however, the incision had been carried well beyond the thrombosed area and the vein was blocked in what appeared to be healthy sinus. On the day after the operation, Dr. E. S. Thomson reported a distinct difference in the appearance of the two eye-grounds, the right showing considerable congestion with some swelling of the nerve. Two days later he reported marked improvement. The bacteriological reports were: "Culture from the right mastoid showed a profuse growth of long and short chains streptococci-capsulatus. Pure culture." "Culture from excised jugular vein showed a slight growth of streptococcus mucosa capsulatus (Pneumococcus Type III)." "Blood culture showed no growth after eighteen hours' incubation."

Four days after this operation, signs of reinfection in the sinus were evident and increased inflammation in the eye grounds was again reported. A second operation was then performed, at which the remaining portion of the transverse sinus was uncovered and blocked by pressure at the torcular, about at the junction of the transverse with the longitudinal sinus. As there was no bleeding to interfere, the infected wall was satisfactorily excised well beyond the clot, a portion of which had again broken down into fluid pus.

The control of hemorrhage in the transverse sinus has at times seemed to me more difficult than it is in the sigmoid, owing to the triangular cross section of the vein in its course between the layers of the tentorium. Sometimes in this region the lumen seems to extend varying distances inward, and the inelastic walls make it difficult to reach the deep apex between them. Particularly is this true near the entrance of the superior petrosal sinus which often empties itself through a series of openings three or four mm. apart, extending along the sinus wall two cm. or more, a fact that may be lost sight of by operators in this region, with embarrassing results. In the sigmoid, with but two sinus walls, occlusion is more easily accomplished.

The excision of the vein well back to the torcular and blocking of the vein well behind the infected area at the second operation is, I think, what led to prompt recovery in this case and rendered repeated operations on the sinus unnecessary. This opinion is based on experience with other cases, one in particular, previously reported[1], in which thrombi became reinfected after "free bleeding" had been obtained at four separate operations, and not until the torcular was reached did reinfection of the clot cease and the patient show signs of recovery.

That the process tends to limit itself at the torcular, and in cases of this kind rarely extends to the opposite side, was remarked by Mr. Ballance[2] over thirty years ago, and his discussion of this point with Mr. Hugh E. Jones, Senior Surgeon of the Liverpool Eye and Ear Infirmary, while already referred to in the report mentioned, may be of interest here.

The usual arrangement at the torcular[3], you recall, is for the superior longitudinal sinus

to turn to the right and be continued into the right transverse sinus, and for the left transverse sinus to be a continuation of the straight sinus. Anatomists have known this but they did not know the importance of emphasizing it in their text books, or they would not have referred so frequently to the torcular as a marked dilatation of "irregular form" where the sinuses meet, the exceptional "sinuum confluens."

Mr. Ballance drew the otologist's attention to the usual state of things, however, when he said, "It is an error to suppose that the lateral sinuses are continuous at the Torcular Herophili; the right sinus is continuous with the superior longitudinal sinus, and the left sinus is as a rule a continuation of the straight. There are sharp bends in the venous channels where the lateral sinus commences and these are joined across the front of the internal occipital protuberance by means of a separate sinus, or cross branch, of small size; thus a thrombosis of one lateral sinus need not, and probably will not, be accompanied by thrombosis of the other lateral sinus, and so life is spared."

While the above arrangement is not invariable it will be found to be the general rule.

Mr. Jones[4] held the contrary opinion, stating that, "Once at the torcular the progress of infection to the other great sinuses is easy," and that the question of extension of infection to the opposite sinus had not received the attention it deserved in literature. He supported this opinion by reference to a case reported by himself, a remarkable one by Whitehead, and one by Lodge; but, with the exception of Whitehead's case, the others appear to me not to have been due to gradual extension of the thrombus from one sinus to that of the opposite side, but to the formation of a clot, shortly before death, in the whole region of the torcular due, in all probability, to the general condition of the patient rather than to a true extension of the septic thrombus from the lateral sinus, for, while thrombosis of the whole region of the torcular and all the sinuses has been repeatedly reported in cases profoundly septic and debilitated from various causes, so far as I have been able to ascertain, the literature records few cases in which a truly septic thrombus extended from the mastoid region of one side across the torcular to the opposite side.

The extension naturally takes place only to that sinus of which the one involved is a continuation and, because of the usual separation, except for the rather variable communication between the two sides, it is not likely to extend to the other side "And so life is spared," as Mr. Ballance says.

To return, in conclusion, to the subject of this report, one week from the onset of the infection, the first day the signs of infection could reasonably be attributed to the mastoid and not in a large measure to the chest, with the leucocyte count and temperature lower, the canal still free from swelling or sagging of its posterior wall, the drum membrane flat and the hearing good despite a fairly profuse discharge, there was found, on opening the mastoid, destruction of the inner plate and an eroded sinus wall with a broken down thrombus and free pus in the vein; a thrombus completely filling the sigmoid sinus and jugular bulb and involving a part of the transverse sinus.

From the advanced state of suppuration found in the sinus and from the loss of inner plate, one is inclined to believe the posterior part of the mastoid became attacked almost at the onset of the infection.

This is unusual, but it should not be unexpected with this type of infection. This organism works insidiously, and seems to wear its capsule as a mask, the streptococcus mucosus capsulatus, the pneumococcus group 3.

127. *East Sixty-second Street.*

REFERENCES.

1. Page, John Randolph. A Case of Spetic Thrombosis of the Jugular Bulb, with Repeated Formation of Septic Thrombi in the Sigmoid and Lateral Sinuses, with Reference to the Literature on Involvement of the Torcular Herophili in Such Cases. Transactions of the American Otological Society, 1916.
2. Ballance, Charles A. On the Removal of Pyemic Thrombi from the Lateral Sinus. The Lancet, v. 1, 1890, p. 1114.
3. Cunningham. Manual of Practical Anatomy, v. 2, p. 211.
4. Jones, Hugh E. Some Considerations which Determine the Extent of an Operation in Septic Invasion of the Lateral Sinus. Jour. Laryngol., Rhinology and Otology, March, 1915, v. 30, p. 107.

MALIGNANT TRICUSPID ENDOCARDITIS WITH PROBABLE BANTI'S DISEASE.

A Case Report.*

By W. M. SHEPPE, M. D., University, Va.
From the Laboratory of Bacteriology and Pathology, University of Virginia.

In a recent report, appearing in the *American Journal of Medical Sciences*, the actual

*Read before the Medical Journal Club of the University of Virginia.

and relative infrequency of primary acute endocarditis involving the valves of the right heart alone, was emphasized and the literature reviewed. Since the appearance of this article a case has occurred on the Pathological Service of the University of Virginia Hospital, which shows many points of similarity, both clinically and pathologically, to those cases already reported.

CASE REPORT.

T. S. MEDICAL No. 9225:—University of Virginia Hospital.

Patient first entered hospital July 26, 1921, complaining of "weakness."

Family and past history.—Unimportant.

Present Illness.—The patient thought that the present illness began about November, 1920, when he first noticed marked vertigo, chills and night sweats. After that time he grew steadily weaker and the initial symptoms persisted. He was unable to work and lost his appetite.

Physical Examination.—Examination showed a slightly undersized colored man about forty years of age. There was a slight edema of the eyelids. The heart was moderately enlarged to both the right and the left sides. A low systolic murmur was heard at the apex and transmitted toward the left axilla. Both apices were dull and the dullness of the right side extended downward to the second rib in front. The breath sounds were exaggerated at both bases in the back and fine inconstant rales were heard. The liver was palpable one inch below the costal margin. The spleen extended three and one-half inches below the left costal margin and to the mid line. Several nodes were palpable in the left axilla. A large scar was noted on the dorsum of the penis. Temperature on admission, 102 degrees. The temperature was intermittent in character, rising as high as 104 degrees.

BLOOD PICTURE:

Hb. 70%
Red Blood cells 3,100,000.
Leucocytes 11,000.
Blood pressure Syst. 118 Diast. 68

Smears showed a secondary anemia of moderate degree.
Wassermann, negative.
Widal, negative.
Urine, negative.

The patient left the hospital against advice but did not improve and returned several times in the next few months. The blood picture remained essentially the same although the number of leucocytes fell slightly and the red blood cells increased to 3,500,000.

On October 11, 1921, the patient became much worse. Weakness, dyspnoea, and edema of feet and ankles were very marked. He complained of severe muscular pains and the muscles were very tender on palpation. A severe cellulitis of the left elbow was noted and the chest, abdomen and arms exhibited numerous pustules.

The patient became comatose and died October 12, 1921.

AUTOPSY:—*External Appearance*: The body is that of a fairly well developed and well nourished colored man. The eyes, ears and nose were negative. The teeth were very poor with definite circumdental pus pockets. Petechial hemorrhages were seen in the buccal mucosa. Both superior and inferior cervical nodes, as well as the occipital group were palpable. The axillary nodes might be felt on the left side. The supraclavicular, epitrochlear, and inguinal nodes were not palpable. A large scar, rectangular in shape, was noted on the dorsal side of the penis. It was so placed that the pre-existing ulcer caused erosion and subsequent disappearance of the frenum. There was moderate edema of the left foot and ankle.

Abdomical Cavity.—The superficial fat was normal in color and quantity. About 800 c.c. of slightly turbid, yellow fluid was found in the peritoneal cavity. The peritoneum was smooth and glistening. The omentum was attached by a small band to the region of the right internal inguinal ring. The mesenteric nodes were not enlarged. The retroperitoneal nodes were enlarged to the size of a robin's egg. The common duct was clear of stones. There were definite adhesions surrounding the spleen. No adhesions were noted in the region of the gall bladder and appendix.

Thoracic Cavity.—There was no free fluid in either of the pleural cavities. On the left side very dense, fibrous adhesions fused the visceral and parietal pleurae over all the surfaces of the lung. There was no enlargement of the peribronchial nodes. The pericardium was adherent to the medial surface of both lungs. On opening the pericardium the inner surface was roughened and covered with numerous ecchymoses. Large flakes and strands of yellowish fibrin were scattered over the surface. The anterior surface of the heart was covered with a shaggy exudate. The sac con-

tained about 25 c.c. of sero-sanguinous fluid.

Heart.—The heart was normal in size. Numerous ecchymoses were scattered over the surface, particularly anteriorly and near the apex. The surface of the epicardium was roughened. The myocardium was slightly hypertrophied. Several poorly walled off abscesses were seen here and there underlying the epicardium. A small irregular vegetation was noted near the base of the posterior valve leaflet of the tricuspid valve. This thrombus involved the entire thickness of the valve leaflet. It was rather friable and a light yellow in color. The other valves were clear. No mural vegetations were noted. The aorta was normal.

Lungs.—Left Lung: The upper lobe was solid and airless. Over the surface of this lobe were seen numerous small abscesses, some of which underlay the pleura and some of which involved the pleura. The color of the roughened surface was a yellowish green. Numerous scattered fibrous tags were suspended from the surface of the lung. The inferior lobe was crepitant on palpation.

On Section: Practically no functioning lung tissue was noted in the upper lobe. Many discrete and coalescing abscesses occupied the whole of the lobe. The bronchi were clear. The abscesses varied in size from that of a pinhead to the size of a dime. They were filled with a thick yellowish pus. The cut surface of the lower lobe was normal in appearance.

Right Lung.—Numerous fibrous tags were adherent to the entire surface of the lung. Interlobar adhesions fused the lobes tightly together. The lung was crepitant on palpation. On section the cut surface was normal in appearance.

Stomach.—Numerous petechial hemorrhages were noted in the gastric mucosa. The stomach was otherwise normal.

Large and Small Intestine.—Normal.

Pancreas.—A single small abscess surrounded by a marked area of congestion was noted on the anterior surface of the pancreas. The organ was otherwise negative.

Liver.—The liver was large and soft. It was normal in color and shape. The gall bladder was distended with bile but no stones were palpable. On section the cut surface had a hazy, fatty appearance. An occasional small abscess was seen here and there in the organ, especially close under the capsule. There was no evidence of hepatic cirrhosis.

Spleen.—The organ was about four times the normal weight and size. It was normal in shape and color but quite soft in consistency. On section: The cut surface was a bright chocolate red in color. Numerous abscesses were studded here and there over the cut surface. No details of structure could be made out.

Kidneys.—The kidneys were about one-half times larger than normal. The fetal lobulations were very marked. The organs were soft and the surfaces were studded with many small abscesses. The capsules were not adherent. On section: Many small abscesses were scattered throughout the parenchyma. The cortex was thinned and the pyramids fused indefinitely into one another. The glomeruli were indistinctly seen. The pelves were normal in size and free of pus and blood.

Bladder, Adrenals and Prostate.—Normal.

Anatomical Diagnosis.—Pyemia and septicemia; multiple abscesses of right lung, spleen, pancreas, kidneys and heart; acute fibrinopurulent pericarditis; endocarditis with vegetation of tricuspid valve; acute purulent pleurisy; diffuse cellulitis of left elbow and fore arm; fatty degeneration of liver; pyorrhea alveolaris. Perisplenic adhesions. Enlargement of cervical, axillary, occipital and retroperitoneal lymph nodes. Fluid in peritoneal cavity. Chronic fibrous pleurisy. Scar on dorsum of penis. Edema of left ankle.

Microscopic Diagnosis.—Study of the microscopic sections confirmed the diagnosis made at time of autopsy. The histologic pictures of the spleen and heart were of special interest.

Spleen.—The capsule is definitely thickened and wide bands of fibrous tissue project downward into the parenchyma of the organ. Many large, irregular pink staining areas are noted. These are structureless and appear to be hyaline. The walls of the sinuses are thickened by a fibrous tissue proliferation. The sinuses themselves are filled but not engorged with red blood cells. Many very large endotheloid cells are seen but there is no evidence of blood destruction by these or other cells. Many small lymphocytes are present. The hyaline masses seem to occupy the former position of the Malpighian bodies which have entirely disappeared. There is considerable fibrous tissue proliferation about the blood vessels.

The lymphatic vessels stand out unusually plain and seem to be rather numerous. By making use of the iodine-sulphuric acid tests amyloid was readily demonstrated in the sections.

Myocardium.—The heart muscle fibers are swollen and the cross striations have disappeared. The nuclei are normal in shape and staining. Many brown pigment deposits are seen, particularly adjacent to the nuclei. A number of small areas are seen in which the muscle tissue has been partially replaced by a deposit of fibrin and infiltrated with leucocytes. The vessel walls show a proliferation of fibrous tissue in the media. The whole section has a hazy, cloudy appearance.

Incidence.

References, either in textbooks or journals, to involvement of the right heart alone are very scanty and for the most part are confined to comment on the rarity of the lesion. In an analysis of 209 cases of endocarditis, Osler reports the right heart alone involved only nine times. Twelve cases are reported from 21,000 autopsies at Guy's Hospital and only four cases have occurred among 6,800 autopsies at Bellevue Hospital. An additional case is reported from a series of 429 autopsies in the U. S. Army. In 444 cases coming to autopsy at the University of Virginia Hospital, only one case has been encountered. Smith, in a review of the literature of gonorrheal endocarditis, reports a much higher incidence (35.5%) of right sided lesions, when the gonococcus is the etiological factor. This figure, however, includes cases in which valves of both the right and left sides are involved.

Mechanism.

The determining factors which lead to the more frequent involvement of the mitral and aortic valves are as yet not clearly understood. The most likely surmises may be briefly summarized as follows:

1. It has for some time been a matter of common knowledge that the growth of the gonococcus is favored by a reduction in the oxygen tension of the surrounding medium. Any of the heart valves may afford temporary lodgment for the gonococcus but those organisms reaching the tricuspid and pulmonary valves find an environment eminently suited for their growth and multiplication, namely, a constant bath of venous blood in which the oxygen tension is actually and relatively decreased.

Conversely, it is possible that the extreme rarity of infection of the valves of the right side by organisms other than the gonococcus may be accounted for by the fact that the growth of these organisms is inhibited by the same factors under which the gonococcus flourishes. Although it is true that as a whole the pyogenic bacteria are not as sensitive to changes in the CO_2O_2 ratio as the gonococcus, yet the oxygen tension of the venous blood may be so low as to readily inhibit their growth.

2. The closure of the mitral valves takes place with a sharp snap and the surfaces of the leaflets are subjected to a much sharper blow than are those of the tricuspid. The normal endothelial cells are unaffected by the force of the blow but a cell which has been more or less injured by bacterial invasion may be readily traumatized and thus afford a point of low resistance with a resulting bacterial proliferation at this point.

3. In case of a bacteremia (a condition which is prerequisite for the production of heart valve lesions of bacterial origin) the lungs may most frequently be the first locus involved (abscess, infarct, etc.). From such a focus the blood re-entering the heart via the pulmonary veins would carry large numbers of bacteria which would, of course, encounter first the leaflets of the mitral and aortic valves and find lodgment thereon.

Clinical Aspects.

It is not the purpose of this paper to discuss the clinical diagnosis of the lesion in question but the following points may be mentioned, for the sake of completeness, as outstanding features in the picture:

1. Jugular pulse.
2. Liver pulse.
3. The condition of the heart does not improve under therapy; in fact, the cardiac signs become accentuated.
4. Murmurs are frequent.
5. It is usually accompanied by lung infarction and often by lung abscess.
6. The outcome is always fatal.

The lesion is most easily confused clinically with relative tricuspid insufficiency, but in the latter condition the diagnostic points mentioned above are usually lacking and the insufficiency improves under therapy. The physical signs in the lungs are persistent but rapidly changing in character.

SUMMARY OF ANATOMICAL FINDINGS. An analysis of the autopsy protocols cited in the reports from Bellevue and University of Virginia Hospitals reveals the following:

	BELLEVUE	U. VA.	SUMMARY
Number of cases	5	1	6
Septic Temperature	5	1	6
Enlarged Spleen	3	1	4
Acute and Chronic Pleurisy	3	1	4
Lung Infarction	3	..	3
Purulent Pericarditis	1	1	2
Lung Abscess	1	1	2
Abscess of Kidneys	1	1	2
Abscess in Liver	..	1	1
Abscess in Pancreas	..	1	1
Abscess in Spleen	..	1	1
Bacteriologic Findings			
Staphylococcus aureus	1	1	2
Streptococcus Hemolyticus	1	..	1
Pneumococcus	1	..	1
No cultures	2	..	2
Average duration	3 mos.	Duration 8 mos.	3½ mos.
Diagnosis	Broncho Pneumonia	Banti's disease	(Broncho (pneumonia, Banti's disease.

It is apparent that the case from the University of Virginia Hospital is very similar to those already reported. The diagnosis in this case of Banti's disease was made on the presence of a markedly enlarged spleen, severe anemia, duration of illness and ascites.

Attention is directed to the occurrence of abscesses in the spleen, pancreas and liver, which did not occur in the Bellevue series. The much greater duration (eight months) of this case suggests that the septicemia and resulting endocarditis were superimposed upon a more chronic condition which had materially lowered the resistance of the patient.

CONCLUSIONS.

The clinical course of the case cited would indicate a chronic, slowly progressive condition on which was superimposed an acute and what proved to be a terminal pyemic infection. The presence before death of an enlarged spleen, ascites and a secondary anemia, together with the course of the disease, led to the diagnosis of Banti's disease: The autopsy corroborated these findings and in addition brought out the perisplenic adhesions which are an almost constant feature of this form of splenic anemia.

The pathological histology of the spleen was typical of that of Banti's disease and confirmed the diagnosis.

In addition, the findings of an acute pyemia were revealed, namely, abscesses of lung, kidney, liver, pancreas and heart; acute purulent pericarditis and a vegetation on the tricuspid valve.

The case is of interest from two points of view:

1. It is an example of probably an early type of Banti's disease.

2. There is an incidental finding of a vegetative endocarditis involving the tricuspid valve alone.

SUMMARY.

1. Vegetative endocarditis involving the tricuspid valve alone is a very rare lesion.

2. The rarity may be due to (a) decreased oxygen tension on the right side of the heart. (b) the sharper snap of the mitral valves resulting in tranma of cells invaded by bacteria, (c) a primary lung involvement, thus bringing large numbers of bacteria into the left heart.

3. The condition presents a definite clinical picture which, however, may be readily confused with tricuspid insufficiency.

4. The anatomical findings are found to be similar in all the cases reported. The condition is frequently accompanied by multiple abscesses in all the viscera, in which abscesses the pyogenic cocci are demonstrable.

REFERENCES.

Albutt. System of Medicine.
Broadbent, W. H., Diseases of the Heart, 1899
Thayer and Lazear, J. of Exp. Med. 1899—p. 81.
Fraentzel, Charite Annalen, 1884, Vol. 9.
Herz, Max, Herzhankheiten, Wein, 1912, 167.
Hirschfelder. A. D., Dis. of the Heart and Aorta.
Mackenzie, Sir James, Diseases of the Heart. 2nd Ed.
Manges. M., Amer. Jour. Med. Sc. 1917 CLIV. 72.
Osler, Sir Wm., Gulstonian Lectures, 1885, 1, 485.
Strumpell, A. V., 4th Amer. Ed., 1912.
Young, H. J. and Cotter, L. H., N. Y. Med. Jour., 1920. 92. No. 21.
Pathology of Infectious Endocarditis, Brit. Med. Jour., II—1889—1269.
Macallum, A Textbook of Pathology.
Adami and McCrae. Textbook of Pathology.
Delafield and Prudden, Textbook of Pathology.
Smith, D. C., Amer. Jour. Med. Sc., June, 1921, No. 6, Vol. CLXL. p. 824.
St. George, A. V., Amer. Jour. Med. Sc. October, 1921.

RECENT ADVANCES IN THE TREATMENT OF CORNEAL ULCERS.*

By EMORY HILL, M. D., Richmond, Va.

Perhaps no absolutely new method of treating corneal ulcers has been advanced in the past few years which offers any marked improvement over older methods. Individual observers praise certain modifications of the established forms of treatment, but there seems to be no general agreement that any of these modifications are of extraordinary value. There is, however, a tendency in the literature to emphasize certain agencies and multiply evidence in their favor, while considerable tendency may be observed to avoid the severer methods of cauterization of the cornea and the opening of the anterior chamber.

The perfectly well known agents, such as atropin, hot fomentations and bandaging, need no mention. Of the antiseptics used for direct application, tincture of iodine and 95% alcohol enjoy much favor. Such drugs for irrigation of the conjunctival sac vary from the practically inert boric acid to mercurial preparations used in sufficient strength to exert positive bactericidal effects. Mercurochrome in 1% solution, mercurophen (1-8000) and oxycyanid of mercury (1-6000) have warm advocates. Subconjunctival injections of normal salt solution, bichloride of mercury and cyanide of mercury are used with good results by some observers. Dionin probably deserves more attention than it has received. de Schweinitz says that, in addition to its lymphagogue and analgesic action, it seems to have a positive effect in stimulating corneal regeneration. Its effect is enhanced by adrenalin and also by holocaine.

It is worth while to consider certain methods of diagnosis which assist in the determination of the treatment of corneal ulcers. First, the accurate outlining of the area of the cornea to be treated. Fluorescine has been known for a long time as an inert staining material giving a beautiful green tint to all portions of the cornea which are denuded of epithelium. This agent allows an accurate demarkation of the area to which application of drugs or cautery should be made, in addition to its very great service in demonstrating minute breaks in the epithelium which are difficult to detect otherwise. Several additional staining materials have been suggested recently. Small uses acriflavin in 2% solution in normal salt. This is non-toxic, non-irritative, and antiseptic, giving an emerald green color. Kleefeld states that Bengal rose, Victoria yellow and azoflavin are true vital stains which do not color the epithelium.

A preliminary to the logical treatment of any ulcer is a bacteriologic study of its contents. This is, of course, no new idea, but one sadly neglected by ophthalmologists. Recent literature shows a very considerable emphasis upon the bacteriologic study of corneal lesions, not only for the sake of rational treatment of ulcers, but for the sake of a better classification of ulcers. I venture to predict that the time is not far off when the ophthalmologist who fails to consider the bacteriology of cases of corneal ulceration will feel himself as guilty as the physician who makes no effort to find whether a membranous sore throat is or is not due to the diphtheria bacillus. One has but to consider the supreme importance of the recognition of the pneumococcus and diplobacillary types, for which we have specific treatments, to realize this. It is becoming more and more a routine procedure to stain smears from corneal ulcers and to follow this with cultures when the organisms present are not readily identified in the smears.

Specific Therapy: The serpiginous ulcer due to the pneumococcus has concerned us especially because of its severity and resistance to treatment. It is for this type of ulcer that drastic cauterization has been employed and the incision devised by Saemisch frequently practiced. This ulcer is to-day treated by a specific remedy which has robbed it of its terrors, and one need not fear to lose an eye if he has opportunity to see it in the early stage of a pneumococcus infection of the cornea, provided he applies optochin in the proper manner. Morgenroth and Levy in 1911 introduced ethylhydrocuprein chloride, since sold under the trade name of optochin. Reports of the efficacy of this drug have been most enthusiastic with some contradictory reports which may be explained, I believe, on the grounds of an improper method of using the drug. The peculiar pathology of this ulcer must be remembered, with its advancing crescentic border harboring the pneumococci in the anterior layers of the substantia propria, overhung by a shelf of epithelium and Bow-

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology at Roanoke, April 13, 1922.

man's membrane. Dropping optochin into the conjunctival sac is about as effective as dropping it in the palm of the patient's hand. It does not come in contact with the pneumococci. If the solution is made fresh and applied properly it will kill the pneumococci and a prompt arrest of the spread of the ulcer will be secured with rapid healing. The method of doing this effectually is to curette gently the overhanging margin, laying bare the substantia propria, and swabbing the solution vigorously into the cornea for 15 or 20 minutes. The floor of the ulcer is not inhabited by living pneumococci and needs no attention, but the advancing edge must be thoroughly saturated with the drug. Old solutions are irritating and may cause marked exfoliation of epithelium. The lacrimal sac is often the source of infection when the corneal epithelium has been scratched by a trivial injury, and the sac should be thoroughly irrigated with the optochin solution. This will obviate the necessity of removing the sac, at least until the ulcer has healed. I feel sure that optochin has not had a square deal because of faulty methods of application, the use of old solutions, and the use, during the war, of an American product which was not potent. It seems to me a great misfortune for us to take seriously the unfavorable reports on this drug in the face of the truely marvelous results obtained by those who have used it properly. Bluhm has reported 55 cases treated with optochin of which 45 recovered. He thinks the results no better than by other therapy; but he states that the cases were the result of injury occurring from 6 to 14 days previous to the beginning of treatment. These may be considered neglected cases and it is pertinent to inquire whether other methods of treatment have resulted in so large a proportion of recoveries in neglected cases, granting that the term "recovery" is not very definite. Gruter has found that pneumococcus and streptococcus viridans are killed by optochin, though freshly cultivated pneumococci from ulcers are 100 times as resistant as laboratory strains. Bedell has also found the drug efficacious in streptococcus infections. Gruter advises against the use of atropin sulphate at the same time with optochin because of the formation of an insoluble optochin sulphate. Less than 1% solution was of no value and more than 5% damaging to the cornea. He makes repeated applications of a 5% solution for 5 minutes to deep ulcers.

The antipneumococcus serum has certain limitations which hamper materially its value. The lack of blood supply to the cornea lessens the access of the serum to the site of infection, and the various types, at least four, of pneumococci produce different antibodies, one not being beneficial in case of infection by another type of the organism.

In judging the results of optochin therapy we may profitably consider the alternatives. Cauterization with actual cautery or carbolic acid leaves very dense scars. The Saemisch section makes a communication between the interior of the eye and the infected area of the cornea, with considerable danger of permanent anterior synechia if not actual prolapse of the iris. These are very real dangers, and a moderate hypopyon is scarcely justification for such an operation since the hypopyon is sterile. To offset these objections, we have the fact that the drainage is out of the eye rather than into it, and the renewed aqueous is less cellular and presumably brings antibodies to the seat of infection, though not much production of antibodies can be expected when the infection is in an avascular tissue like the cornea. Indeed, the lack of tendency to resolution in pneumococcus ulcer is in marked contrast to the behavior of a lobar pneumonia and a pneumococcus conjunctivitis. In all events the Saemisch incision, though effective when an ulcer resists all other treatment, is at best a necessary evil to be avoided if optochin can be applied before great destruction of the cornea has occurred. As an improvement on the Saemisch method, Gifford proposes to make the incision tangent to the ulcer without quite touching it. He states that this limits its spread. Because of the tendency to increased intraocular tension with massive hypopyon, Nance has advised frequent paracenteses.

The diplobacillus of Morax and Axenfeld causes an ulcer of the cornea which may penetrate deeply and leave a dense scar. This type of infection is resistant to the usual forms of treatment. Of course, the actual cautery will kill this organism, but it will also destroy corneal tissue, and the specific remedy for this organism is as effectual as optochin in pneumococcus infections. A 1% solution of zinc sulphate retards the growth of the diplobacil-

lus and allows prompt healing of the ulcer. Zinc sulphate dropped into the conjunctival sac and sprayed into the nose removes the danger of recurrences. There is considerable evidence of the usefulness of zinc sulphate in other ulcers than the diplobacillary type. Hayashi advises it for ulcus serpens. Undoubtedly this drug is beneficial in many forms of conjunctivitis besides the diplobacillary form, and it is not surprising that it should be useful when swabbed into the ulcerated area of the cornea.

Paraspecific Therapy: The tendency of serologists to question the specificity of sera is reflected in the practice of using such agents as diphtheria antitoxin to increase antibodies against infections other than those due to the diphtheria bacillus. We are all familiar with the use of tuberculin which seems to do good in ocular lesions which are not certainly tuberculous, and we are beginning to doubt whether the therapeutic test establishes the diagnosis. What has been termed paraspecific therapy is becoming popular. Key has reported exhaustive studies on the subject. He draws the following conclusions: anti-diphtheritic serum is easily obtained, the dosage is certain and the preparation dependable; it can be utilized while waiting for bacteriologic diagnosis and the preparation of specific vaccine or serum. Therefore, he prefers anti-diphtheria serum to others. He gives the following indications for its use: pneumococcus and staphylococcus ulcers, phlyctenular pustules, penetrating wounds which are infected, postoperative infections, panophthalmitis. He advised early use, by mouth as well as hypodermic injection, giving 5000 to 2000 units, the latter being repeated frequently. de Schweinitz reports the cure of a hypopyon keratitis with diphtheroids by means of antidiphtheritic serum. Typhoid vaccine and milk injections have been recommended also, the latter enjoying considerable vogue in some clinics. Yeast serum has been used by Deutschmann. Roemer describes as autoserotherapy his method of injecting conjunctivally the serum obtained from a blister produced on the patient's arm.

Heat Therapy: Jackson says that every form of heat has been used for corneal ulcers except live steam and boiling alcohol. He states that it is not necessary to cook the organisms, but only to raise them to a temperature which will destroy their power of multiplication, and this temperature will not do any great damage to the cornea. In accordance with this principle the severer methods of cauterization of the cornea by actual cautery or electricity seem to be giving way to less drastic methods. Prince's pastuerization with heat applied close to the ulcer, but not in direct contact with it, has found much favor. Weekers uses the loop of an electric cautery at 122°F. close to the ulcer, continuing it for one minute and repeating 2 or 3 times at one sitting. He found in experiments upon rabbits that the lesions produced by this degree of heat are epithelial swelling and slight edema of the parenchyma immediately beneath, but no true destruction of corneal tissue. The Shahan thermophore appears to be a distinct advance over other agents for administering heat in numerous eye lesions including corneal ulcers. This instrument allows careful graduation of the temperature, and can be placed accurately against the cornea.

Other agents suggested, but not yet proven of extraordinary value, may be mentioned. Darier uses scarlet red; X-rays are advised by Hunter without the support of any clinical evidence. This is mischievous advice for it is well known that X-rays cause burns with intractable pain when used near the eyes without sufficient protection. Lawson and Davidson have reported remarkable improvement in a hypopyon ulcer from radium. Birch-Hirschfeld uses ultraviolet light and reports good results in pneumococcus ulcers.

In summing up the present status of this subject, it may be said that less drastic methods of killing or checking the growth of bacteria in the cornea without gross destruction of the corneal tissue itself are available in all but the severest cases; and even the latter, when due to pneumococcus, are amenable to specific therapy by optochin. Two forms of ulcer, the pneumococcal and diplobacillary, are positively curable by specific drugs. Paraspecific therapy offers distinct benefit where specific therapy is not possible. Refinements in applying heat to the cornea are a gratifying improvement upon older destructive methods.

Mary had a little goat,
The doctor got his glands.
He sewed them up in Tommy Jones,
Now Tommy eats tin cans.—*Selected.*

ACUTE PANCREATITIS.

A Case Report.*

By ARTHUR S. BRINKLEY, M. D., Richmond, Va.

Mr. H. P. W., white, male, age 21, occupation—student University of Richmond. Referred by Dr. S.

Admitted to the Retreat Hospital, October 4th, 1921, at 4:45 P. M., with the following history which was gotten partially from the patient and his roommate at the University.

C. C. Sudden severe cramp-like pain in the abdomen.

P. I. Has enjoyed good health until one-thirty P. M., about three and one-half hours ago. About three-quarters of an hour after eating a light lunch, was seized with a sudden and violent pain in the central and lower part of the abdomen, seemed to be worse in the region of the umbilicus; it was cramp-like and seemed to bore straight through to the back; it was so severe that it kept him drawn almost double. Felt terribly nauseated and began to retch immediately but has been unable to vomit. Has never had any attacks like this before. The pain is so severe that it makes breathing difficult; was given a hypodermic of morphine before leaving the University for the hospital, but it has had very little effect on the pain.

P. H. *Surgical*—negative. *Medical*—usual diseases of childhood; no serious illness.

Cardio-respiratory. Negative previous to onset of present trouble, no dyspnoea, no edema, no cardiac or thoracic distress, marked shortness of breath since onset of attack.

Gastro-intestinal. Has fair appetite, has had some slight digestive disturbances at times, no nausea or vomiting until onset of present trouble a short time ago, no hunger pains, no constipation, no jaundice or hemorrhoids.

G. U. Voids normally, no dysuria, no hematuria, no pyuria.

Physical Examination. Presents an adult white male lying in bed with both thighs flexed on the abdomen showing all of the signs of an acutely ill patient in a marked state of shock. Extremities are cold and clammy, face pale and pinched, eyes glassy with widely dilated pupils and extremely anxious expression, pulse imperceptible in either wrist, heart sounds slow and feeble, rate fifty per minute, temperature ninety-six, respiration 16. Chest negative. Abdomen tympanitic and board-like in rigidity, intensely sensitive to deep palpation or percussion over entire abdomen.

Blood count. Leucocytes, 16,800: polys, 82: lymphocytes, 15: large mononuclears 3: hemoglobin, 90%.

Urinalysis. Color, straw: turbidity, cloudy: specific gravity, 1042: albumen, trace: sugar, neg.: acetone, neg.: diacetic acid, neg.: microscopic—occasional blood and pus cell: granular and hyaline casts, neg.

Diagnosis. Probably a perforated duodenal ulcer or rupture of a fulminating type of appendicitis followed by marked shock.

Surgery in his present condition was not to be considered so he was given vigorous treatment for shock including hypodermoclysis, hot saline glucose and soda solution per rectum, continuously hot blankets and water bottles, morphine, adrenalin, and caffeine. He began to improve in less than an hour and four hours later his condition had improved sufficiently to attempt an exploratory operation.

Under ether anesthesia a low McBurney incision was made. On opening the peritoneal cavity a marked congestion of the adjacent viscerae was noted; there was a good deal of free fluid in the abdomen which was slightly grayish in color, the appendix was located and found to be congested, edematous and, on stripping through the fingers, some small concretions could be felt but there was no evidence of gangrene or perforation. The appendix was removed by the usual technique. There was no evidence of a Lane band obstructing the last part of the ileum.

Since the appendix did not show enough pathology to warrant the symptoms, the wound was closed in the usual manner and an upper right rectus incision made about two inches from the median line and four inches in length. On opening the peritoneal cavity, an unusual amount of congestion in the stomach, liver, gallbladder, and intestines was noted, also areas of fat necrosis in the omentum. The gallbladder was very tense; the stomach and duodenum were thoroughly examined but no evidence of ulcer was found. On palpating the pancreas, the head was found to be very large, about the size of a big lemon, rather hard and tense; inspection in this area

*Read at a meeting of the Richmond Surgical Society, May 22, 1922, and also at a meeting of the Southside Virginia Medical Association in Norfolk, June 13, 1922.

revealed a good deal of congestion and edema. The condition we were dealing with was unquestionably an acute pancreatitis. The gallbladder was walled off and a trocar and canula thrust in the fundus of the viscus to drain off the bile. The bile was thick black and ropy; there were no stones in the gallbladder or ducts; the mucosa was congested. A tube was fixed in the gallbladder with an interrupted suture of plain catgut and the opening closed up tight around the tube with a purse-string suture of tanned catgut. A rubber dam drain was fixed near the head of the pancreas and the wound closed with through-and-through sutures of silkworm-gut.

The patient left the table in fair shape, pulse 80, volume good. Orders left, bed elevated, hypodermoclysis, saline, glucose and soda solution, continuous gravity method, per rectum: morphine, gr. ¼ hypo. q. 4 hrs. S. O. S., caffeine, gr. 2, hypo. q. 4 hrs., gastric lavage S. O. S., water ad. lib.

Gross Pathology. The specimen consists of an appendix which is 2½ inches long, markedly congested and edematous throughout. The appendix is now incised and the lumen is found filled with several small concretions and bloody looking pus and mucus, the mucosa is congested and shows areas of small ulcers, it is very much thicker than normal throughout.

The patient reacted about three hours after operation, condition fairly good, temperature 99.4, pulse 94, and respiration 22, volume of pulse good. He was nauseated and occasionally vomited a little bile, so a gastric lavage was done, a large quantity of bile stained fluid was returned. Nausea and vomiting were relieved until late in the afternoon of the next day, October 5th, when he was beginning to get nauseated and having some retching. Gastric lavage was done, water returned highly colored with a quantity of gas, temperature at this time 100.3, pulse 100, and respiration 24. Urinalysis practically the same as on admission except the specific gravity had fallen to 1034. He had a fairly good night after gastric lavage. About 9:30 A. M., October 6th, was nauseated and had a good deal of distention; gastric lavage was done and water returned highly colored and a large quantity of gas expelled; temperature 99.3, pulse 94, and respiration 20. Urinalysis—color, amber: turbidity, slightly cloudy: specific gravity, 1032: reaction, acid: albumen, a distinct trace: sugar, neg.: acetone, a large trace: diacetic acid, neg.: microscopic, an occasional blood and pus cell, hyaline and granular casts, neg. Gastric lavage again at four P. M., returned only slightly colored; patient very comfortable after lavage, free drainage from gallbladder, wounds dressed, no evidence of infection.

October 7th, temperature at 8:00 o'clock A. M., 99.2, pulse 80, and respiration 20; he was put on liquids, except milk, q. 3 hours; had a fairly comfortable day. During the night he complained of pain in the abdomen, broke out in a profuse sweat, extremities cold and clammy, pulse 60, weak and irregular: he was wrapped in hot blankets, given morphine and atropine, and two hours later felt much better. Temperature 98.8, pulse 72, and respiration 20.

October 8th, had a good day and felt very comfortable until about the middle of the night, when he had an attack similar to the one the night before; was given the same treatment; he reacted promptly but had a sense of fullness in the epigastrium; began eructating about one hour later and vomited some dark yellow looking fluid; gastric lavage was done, the water returned highly colored and with a good deal of gas.

October 9th. Wounds dressed, slight redness along the suture line of the upper wound. Gastric lavage was given twice during the day, the water returned highly colored each time. Temperature at four o'clock P. M. was 98.8, pulse 72, and respiration 14.

October 10th. Calomel was ordered in fractional doses followed by a saline; bowels moved well. Wound dressed, rubber dam drain removed, some redness along suture line in upper wound, hot wet dressings of saturated solution of boric acid were ordered. Was nauseated the first part of the day from calomel, comfortable the latter half of the day and night.

October 11th. Comfortable day, modified soft diet ordered. Urinalysis showed distinct trace of albumen: specific gravity, 1030: trace of acetone: numerous hyaline casts.

October 14th. Very comfortable for the past three days, wounds in good condition.

October 16th. Wound dressed, drainage tube removed. Was comfortable until 4:30 P. M., when he began to have pain and fullness in upper abdomen; gastric lavage was done, a large quantity of thick brown fluid

was returned. He felt much better after the lavage and had a good night, was put on liquid diet.

October 17th. Very comfortable day, free drainage of bile from upper wound. Urinalysis showed a slight trace of albumen: specific gravity, 1028: acetone and diacetic acid, negative: a few hyaline casts.

October 18th. Free drainage of bile from upper wound. He felt very well until about five P. M., when he began to have pain and fullness in upper abdomen; gastric lavage at 7:00 P. M., returned highly colored, felt better after lavage and slept until 1:00 A. M. Began to have the same trouble; gastric lavage at 2:30 A. M., returned highly colored, large amount of gas expelled. He was relieved immediately and slept balance of night.

October 21st. Had a very comfortable day, modified diet ordered, no drainage of bile for the past two days, wound healing nicely.

From now on the patient improved rapidly, had no further gastric disturbances. Was allowed up in bed on October 26th, and up around the hospital on October 28th. Was discharged on November 1st, 1921, feeling very well.

On April 15th he came in to see me, reported that he had been feeling very well since leaving the hospital and able to work every day. He had gained in weight and looked the picture of health.

LOCAL TREATMENT OF ECZEMA.*

By JAMES W. ANDERSON, M. D., Norfolk, Va.

In the selection of this subject I was guided by the fact that eczema and its twin, dermatitis from external irritants, form a very large percentage of the skin diseases presented for treatment and also the fact that they may, with few exceptions, be relieved by local treatment and a goodly percentage, especially of the latter, be permanently cured by it altogether. I do not wish, however, to leave the impression that local treatment is all that is necessary in their management, but intelligently applied it constitutes the most important part of your therapy.

It is frequently difficult to distinguish between an eczema and a dermatitis, so much so in fact that several authorities have come to the point of denying the term "Eczema" a place in the nomenclature of dermatology and Highman, in his recent work, omits it, preferring to call the entire group "Dermatitis" with a qualifying adjective, such as Infantile Dermatitis, etc. However, as time and custom have placed their stamp of approval upon this term, it would only tend to confuse without clearing the issue to make the change.

When a case of either of the diseases under discussion is presented for treatment, a careful history should be taken as to the patient's general health, etc., and special attention should be given to finding if the patient is coming in contact with any irritant that might be causing his condition. The patient's occupation, habits and clothing should come under suspicion. On the hands, soap, dish-washing, oil or any chemical or mechanical factor should be inquired about; likewise, on the face and neck, the use of hair tonics, dyes, fur neck pieces, etc., should be asked about. Anything that you might consider as having a bearing on the case should be eliminated from contact with the part and treatment instituted. I have on two occasions seen an obstinate eczema of the mouth disappear after a change of tooth paste.

For the purpose of treatment, eczema may be divided into the following clinical types:

PRIMARY:—Erythematous, papular, vesicular and mixed.

SECONDARY.—Pustular, squamous and lichenified or infiltrated.

Local treatment, to be successful, should be based upon the predominating type of lesion, each type requiring a distinct plan of treatment, and in no branch of therapeutics is attention to detail of more importance than in this.

I am not going to attempt to give you all the various methods of treatment, but to try and outline those which I have found to be of value in my own work, for it is better to learn a few drugs well, than to have a limited knowledge of many.

The erythematous type usually appears upon the face or hands, the parts exposed to the weather, and in the acute form may give rise to so much redness and edema that it may at first glance be mistaken for erysipelas, but the absence of the systemic symptoms accompanying the latter will usually clear the diagnosis. These cases, as a rule, are very susceptible to the action of the sun and wind, so they should

*Read before the Southside Virginia Medical Association at Norfolk, June 13, 1922.

be kept in doors during the treatment. During this stage of the disease, cold compresses of boric acid, Liquor Burow, or a one per cent solution of resorcin alternated with calamine lotion, will relieve it. When the case has passed into the squamous or infiltrated stage, the treatment should be changed to correspond.

The papular type is somewhat more difficult to handle and a good routine in these cases is to use a lotion of fifty per cent alcohol with the addition of three-five per cent each of salicylic acid and liquor carbonis detergens. This should be applied two or three times daily followed by a starch and zinc oxide paste. If this fails to give relief, a five per cent solution of nitrate of silver painted on once daily, with calamine and zinc oxide lotion in the interval, will usually suffice.

The vesicular type is best treated with crude coal tar using the formula of Dr. C. J. White, which consists of crude coal tar and zinc oxide, of each six parts, "vaseline" and starch, of each forty-four parts. The first two should be mixed and then added to the latter, producing a black ointment smelling strongly of gas. This should be applied to the lesion once daily and removed with olive oil before the next application. This produces a soothing, desiccating action that is very rapid and satisfactory in its result. If the tar is not available or the patient objects to its use, cold compresses of boric acid or lotio nigra, followed by the application of the starch and zinc paste, is satisfactory.

The pustular type is secondary to one of the primary types, usually the vesicular, which is infected by scratching, but on the body it may be secondary to scabies which has become irritated by treatment and scratching. The infection should be cleared up by the use of boric acid compresses and the use of a two-five per cent ointment of ammoniated mercury with an equal amount of ichthyol. After the infection has disappeared, the treatment should be changed to correspond to the type of lesion remaining.

After the subsidence of the acute stage of the vesicular and erythematous types, you will find the skin dry and scaly, with a slight thickening; this forms the so-called squamous type. At this point Lassar's paste, with the addition of three-five per cent ichthyol, will prove satisfactory. Three to five per cent resorcin in starch and zinc paste is also useful. If the condition is very chronic, a lotion of twenty grs. of salicylic acid and forty grs. of tannic acid to the ounce of fifty per cent alcohol will sometimes give excellent results, but must be used with caution as it tends to irritate.

The lichenified or infiltrated type of the disease as a rule follows repeated attacks of the vesicular or erythematous, each attack aided by the scratching producing more thickening until the skin cannot be picked up between the fingers. In the milder type, the skin has a leathery feel with an exaggeration of the normal lines of the skin. The best treatment of this condition is by the use of X-ray or radium, with phototherapy a second choice. If these are not available, one of the vegetable tars may be used, preferably oleum rusci, beginning with six per cent of the drug in a starch and zinc paste and increasing, as the lesion shows tolerance, until the undiluted tar is painted upon the area. Chrysarobin is sometimes of value by causing an irritation which changes the chronic, sluggish condition to an acute one, which is then soothed with a bland ointment, and the process repeated until the infiltration has disappeared. No matter what the treatment, the condition is very prone to relapse.

There are two drugs commonly used in the treatment of eczema which are responsible for the prolongation of many cases which would otherwise be cured in a short time. These are sulphur and bichloride of mercury. The former is capable of producing a very intense dermatitis which you have all seen following the treatment of scabies and is only useful where the condition follows the scratching and irritation in a case of scabies. Bichloride is capable of doing no good in these cases and is capable of transforming a small patch of eczema into an acutely spreading case which will cause the patient a great amount of unnecessary suffering.

290 *Monroe Building.*

CONTROL OF HEMORRHAGE IN TONSILLECTOMY.*

By CLIFTON M. MILLER, M. D., F. A. C. S., Richmond, Va. Associate Professor of Otology and Rhinology, Medical College of Virginia; Ophthalmologist and Oto-Laryngologist, Stuart Circle Hospital.

The constant references in literature of the

*Read at the meeting of the Virginia Society of Oto-Laryngology and Ophthalmology, at Roanoke, April 13, 1922.

past twenty years to the control of hemorrhage during or after tonsillectomy but serves to emphasize the importance of this complication, and the fact that every operator should be prepared to cope with it. Its occurrence with some frequency and the fact that the patience and skill of the laryngologist are often taxed to the utmost to control it forces the conclusion that only those accustomed to working in the oral cavity and with reflected light are fully competent to do operations upon the tonsil.

The best way to deal with hemorrhage resulting from tonsillectomy is to prevent it or deal with it at the time of operation. Secondary hemorrhage is, of course, not unknown, but, in the opinion of the writer, many of the so-called secondary hemorrhages, those that manifest themselves in five or six hours after operation, are merely the free bleeding of a vessel that was left oozing slightly when the operation was concluded and the patient put to bed. Leave the tonsillar fossa absolutely dry and the percentage of secondary hemorrhage will be greatly reduced.

Cases for operation should always have the blood coagulation time taken and if it is seven minutes or more the operation should be postponed until measures for shortening the time can be successfully used. For this purpose administration of calcium salts and gelatine feeding are usually sufficient except in the case of actual bleeders when all measures may fail, but the use of transfusion or the administration of fresh horse serum intravenously or into the connective tissue is of much benefit. In the absence of fresh serum, diphtheria antoxin may be used, but is not so efficacious as the fresh. In using horse serum it is wise to first inject a few minims into the skin to find whether the patient is susceptible to it, for it is always possible to cause a serious or even fatal anaphylaxis by administering it to a susceptible individual. Women should not be operated on at a time too near their menstruation. My own practice is to avoid operation on them from a week before to three days after the completion of menstruation. Adults over forty should have blood-pressure taken before operation, and if it is 160 or over, measures to lower it should be used.

In preparation for operation, a hypodermic of morphine and atropine should be given to all patients thirteen years old or over, in dosage suitable for age and weight of patient. This practice is wise in operations under local as well as general anaesthesia.

The effect of morphine on local bleeding is too well known to need further comment and in local anaesthesia operations it reduces the apprehension of the patient. Atropine by drying up the oral secretions prevents the tonsillar fossa from constantly filling with saliva which saliva undoubtedly prolongs the oozing from the fossa.

Bleeding immediately following operation is reduced by using the cold wire snare in the Beck Instrument without dissection. After the loop is tightened around the pedicle, the tonsil should be cut off very slowly, taking three to five minutes to cut through the pedicle. After removal of the tonsil, carefully inspect the fossa for any small pieces of tonsil that may be left as the presence of these tends to prolong bleeding. After getting the fossa clean it should be carefully inspected, using suction to remove all blood, and look for bleeding points. Any bleeding point that does not stop promptly should be caught with hemostatic forceps and held for a few minutes; if when released bleeding continues it should be caught again and tied. In tying off a bleeding point it is my practice to use 00 chromicized cat gut threaded into a fine curved needle, the needle is then passed above and below the forceps and the ligature tied. Should the bleeding be a persistent oozing, rather than one or two bleeding points that can be caught, gentle pressure into the fossa for several minutes, either with sponge or using the enucleated tonsil as recommended by Greene of Asheville, will frequently be sufficient to stop it. If bleeding persists after this, the application into the fossa of peroxide of hydrogen will frequently control this, or dip a cotton swab into Monsel's solution and wring it out till there is no free solution on the swab, and with it touch lightly the fossa after it has been dried with cotton sponge. The use of tonsillar compression forceps like the Storck-Mickulicz is sometimes necessary but that is best avoided if possible on account of the trauma inflicted on surrounding soft tissues. The suture of the anterior and posterior pillars either over a compress which is to be removed in twenty-four hours or the permanent elimination of the fossa by suturing the pillars for control of bleeding has never been used by me, but many operators use these methods with excel-

lent results. Tying of the external carotid artery has been resorted to in some instances where the bleeding seemed otherwise uncontrollable on account of size of vessel wounded or location of it making tying of the bleeding point impossible. In two of my own cases this procedure was resorted to and both did well, bleeding entirely controlled and recovery uninterrupted. Both of these cases occurred about ten years ago.

If a bleeding point is so located that it cannot be caught readily to be tied and does not stop on application of local styptics or use of pressure in the fossa, the injection of 5 c.c. of normal saline solution to which has been added 5 drops of 1-1000 adrenalin solution will frequently serve to stop it.

The injection is made at several points around the bleeding point Coagulose or coagulen may be found successful used in the same way.

Should bleeding start after the return to bed of the patient, the first thing to be done is to free the bleeding fossa from all clots, then hunt for the bleeding point and tie if necessary. If it is found impossible to catch and tie the vessel, use one of other methods mentioned to control bleeding and place patient in reclining position with ice collar to neck.

Since adopting the procedure of having a patient's tonsillar fossae absolutely dry before sending them to bed following operation, I have had less than one-quarter of one per cent show any bleeding subsequent to operation.

Stuart Circle Hospital.

VAGINITIS DUE TO TRICHOMONAS VAGINALIS.*

By HOWARD F. KANE, A. B., M. D., F. A. C. S.
Washington, D. C.

Associate in Obstetrics, George Washington University.

Trichomonas, as a cause of vaginitis, seems to be rather infrequently encountered. The text-books on gynecology either omit it or mention it briefly as an unusual condition. As a parasite of the intestine and month, it is more commonly found, and the periodical literature contains many papers describing the organism in these locations. The Index of the Surgeon-General's Library contains only about a half-dozen references to trichomonas vaginalis, and K. M. Lynch[1] appears to be the only author who has studied the condition thoroughly. In his article, he states that trichomonas vaginalis is found in acid mucus. It is the same organism, or at least similar to the one, that is found in the sputum in tuberculosis, gangrene of the lung, and gastric cancer.

The source of vaginal infection is not known, but it has been found in urethrae of men after intercourse with women who had the parasite.

The trichomonas is a unicellular organism, about 22x26 microns in size. When seen in a warm fluid medium soon after being taken from the vagina, it is extremely active. It is pear-shaped, with the larger end in front, and from this large end extend four club-shaped flagella. These flagella propel the body by a sort of overhand swimming motion. The rear end is either bluntly rounded or tapered to a short stiff point. The cytoplasm is finely granular and contains several non-pulsating vacuoles. The nucleus is indistinct, ovoid, finely granular, located near the head. The ordinary hanging drop preparation is sufficient for demonstrating the presence of the organism, but for the study of its morphological characteristics a dark field should be used. Lynch attempted to culture this parasite, but was unable to do so in any of the usual laboratory media. Inoculations of various animals were unsuccessful.

By studying the case reported in this paper we have a picture of a typical case of vaginitis caused by trichomonas vaginalis, and will be able to note the effect of various methods of treatment.

Case Report.

Previous History.—Mrs. C. E. E., white, married, 38 years of age, had one pregnancy, full term, 18 years ago. Menses established at 10, of 21-day type, lasting 4 days. No dysmenorrhea except a slight aching in the lower right quadrant on the last day. Until the onset of the present complaint had never had leucorrhea. Has no headache or backache. General health is very good.

Husband had gonorrhea and syphilis about 20 years ago. He states that he was cured (?) of the gonorrhea in a few months. For 5 years he took mercurial treatment and since then has had several Wassermanns, once a year for the last few years, which have all been negative. The patient and their son have also had yearly negative Wassermanns.

*Case reported at the meeting of the Hippocrates-Galen Society of Washington,' January 12, 1922.

History of Present Complaint.—Patient first seen March 23, 1921. She had finished menstruating March 21, 1921. Three weeks before date of visit, she first noticed a thin watery vaginal discharge. After a week this discharge sometimes contained small blood streaks. At the same time she noticed a mild itching of the vagina which has become much more severe. During menstruation the symptoms of irritation disappeared. There have been no bladder symptoms and no constipation. She has been taking lysol douches which have given no relief. At the time of the visit, the itching had extended from the vagina to the labia and thigh, and was almost unbearable.

Pelvic Examination.—Vulva and thighs excoriated. Introitus fairly firm. Vestibule red and tender. Vaginal examination painful. but cervix and body of uterus seemed normal in size, shape, consistency and mobility. Appendages could not be felt.

Speculum showed vaginal mucosa to be very red and edematous. This condition was present over the entire vaginal cavity, including the vaginal portion of the cervix. The external os showed a picture just opposite to that of endocervicitis. It appeared to be a healthy area surrounded by one of marked inflammation. There was no discharge from the external os. but the vault of the vagina contained a small quantity of thin yellowish fluid.

Smears were taken from the cervix and cultures were made from the vaginal secretion. A spinal Wassermann was ordered. As the symptoms of irritation disappeared during menstruation, an alkaline douche (sodium bicarbonate) was ordered, together with saline cathartics.

On April 3, the patient was seen again, and she reported some relief from the douches. The smears were reported negative for gonococcus. The spinal Wassermann was negative. The cultures showed B. coli and Staph. aureus. A drop of the vaginal secretion was examined for trichomonas, but none were seen. Realizing that faulty technic might be responsible for the apparent absence of the parasite, the method of treatment recommended by Escomel[2] was adopted. The vagina was tamponned with boroglyceride, and iodine douches were ordered.

Five days later the conditions were worse. The tampons had caused much pain and the iodine had been irritating. Smears were again taken and the alkaline douche resumed. These smears were subsequently reported negative for gonococcus. Ten days later the patient reported practically no discharge or pain so long as she took four or five douches a day. Examination showed vaginal mucosa of almost normal appearance. The vaginal secretion was again examined for trichomonas, but none were found. The patient was urged to go to a hospital for laboratory examinations and treatment.

The patient was not seen again until August 2, 1921, when she stated that there were no symptoms while she continued taking alkaline douches, but if she omitted them the condition became worse than before. She was now willing to go to a hospital, and was admitted to George Washington University Hospital that night.

Examinations of the vaginal discharge made in the Pathological Laboratory showed trichomonas vaginalis in large numbers. A smear obtained by a platinum loop from the vicinity of the internal os showed organisms resembling gonococcus.

Treatment.—The vagina was tightly packed with tampons soaked in a 25% solution of sodium bicarbonate. This was repeated every other day for 10 days, with douches of sodium bicarbonate twice daily on the intervening days. After the first tamponade the patient was entirely comfortable, and several examinations failed to show the trichomonas. She was discharged on the 10th day.

August 16, 1921.—Two days after leaving the hospital the patient reported that conditions were just the same as before treatment. She was again admitted to George Washington University Hospital. The vaginal discharge was found to be alive with trichomonades.

This time the treatment suggested by DeLee[3] was adopted. Under general anesthesia, the vagina was scrubbed vigorously with green soap and douched with bichloride of mercury, 1: 1500. Then it was packed as tightly as possible with gauze soaked in 25% sodium bicarbonate in glycerin. At the end of 24 hours the packing was removed and, for a week, alkaline douches were given twice daily.

After this treatment, frequent examinations of the discharge showed the dead bodies of the trichomonades but no active organisms. Daily examinations of the stools were nega-

tive, which seemed to prove that the vaginitis was not an infection from the intestinal tract. The irritating discharge was not lessened, and the patient left the hospital on the 8th day, clinically unimproved.

Examination under ether had elicited the fact that the Fallopian tubes were somewhat enlarged and prolapsed. On the theory that the presence of chronic pus tubes perhaps had some influence on the continued irritation, a laparotomy was suggested but not urged.

Two months after leaving the hospital, the patient reported that for one week after returning to her home, the discharge and pain continued. Then both stopped and she has been well ever since.

———

The study of this case and of the literature has led the writer to the following conclusions:

1. The invasions of the vagina by trichomonas is probably more common than is generally supposed.
2. As the cause of vaginitis, this organism is frequently overlooked.
3. The diagnosis should be easy, and proper treatment is almost always sussessful.

Stoneleigh Court.

REFERENCES

1. Lynch, K. M. American Jour. Trop Dis. & Prev. Med., 1915-ii-627.
2. Escomel, E. Bul. de la Soc. de Path. Exotique, 1917-x-553.
3. DeLee, J. B. Ill. Med. Jour., 1920-xxxvii-186.

PELVIC PATHOLOGY AND THE CARDIO VASCULAR SYSTEM.*

By Wm. EDGAR DARNALL, A. M., M. D., F. A. C. S., Atlantic City, N. J.

This paper deals with women. Except for the acute infectious diseases, a woman with a well pelvis is a woman well all over; a woman with a sick pelvis is a woman sick all over. Most of the morbidity of women relating to her nervous system, general health and well being, revolves about her pelvic organs and their proper functionating. This statement must be accepted in a broad sense and includes not only her pelvic organs but her thyroid, mammary, pituitary and adrenal glands and indeed her entire endocrine system, all of which are interrelated and interlocked and function together.

The blood pressure of the average young woman of properly functionating organs is as a rule lower than that of men. If there be excessive thyroid or ovarian action the blood pressure is still further lowered. If this action result in prolonged or profuse menstruation there follow anemias and vitiated states of the blood, and a consequent poor supply of nutrition to the heart muscle itself through the coronary artery. The heart muscle degenerates and slight forms of dilatation with murmurs of a hemic type supervene.

As the average woman grows older and the ovary and other glands slow down in their action there is an accompanying advance in blood pressure. As the menopause is reached and the ovaries cease to functionate there is often an excessive rise of blood pressure with varying nervous symptoms that finally drives her to her physician. The discovery of excessive pressure often leads the attendant to make the mistake of viewing this as cardio vascular disease of an organic nature. As a matter of fact it is not organic but purely functional. A sharp distinction must be made between this type of hypertension and that due to organic changes. Proper regulation of diet and habits and the addition of thyroid and ovarian feeding usually work wonders with the patient. These are the patients that have been labelled "essential hypertension." I sometimes think that anything labelled "essential" or "idiopathic" in medicine is an euphonious way of expressing ignorance of the subject.

Pregnancy in most women is associated normally with a lowered pressure. This is due to the increased metabolism and the consequent drain on the thyroid gland with the associated diminution of the calcium content of the blood. If the thyroid fails to endure the strain of pregnancy and becomes exhausted, metabolism is slowed down. The thyroid function is overcome by the hormones of the placenta and the mammary glands. Elimination does not keep pace with metabolism. Toxins rapidly accumulate in the liver, the system is overwhelmed. Eclampsia follows with all its serious and tragic effects. No woman with a good thyroid develops eclampsia. We must cease blaming the kidneys for this serious affection. The albuminuria of eclampsia, the associated hypertension headaches and other toxic manifestations are but the effects of a toxemia due to a thyroid breakdown, often

*Read before the American Climatological and Clinical Association, Washington, D. C., May 2-4, 1922.

fulminating in its onset and tragic in its results.

The degenerations of the cardiac muscle associated with suppurating neoplasms of the pelvis are analogous to the degenerations observed in any systemic bacterial invasion. The long standing pyogenic infections of the Fallopian tubes, pelvic abscesses, degenerating ovarian cysts or fibroid tumors as well as the cachectic toxemia of cancer in these organs must eventually affect the cardiac muscle. Hyaline degeneration of its fibres results from the toxemias of these conditions just as they would from a pneumonia, an influenza or other acute infectious disease. Myocardial weakness, dilatations, chronic nephritides and arterial disease must eventually follow the one as truly as they do the other class of diseases if the pelvic pathology is allowed to continue indefinitely without relief.

The frequent association of fibromyomata of the uterus with cardio vascular changes, together with the fact repeatedly observed that the cardio vascular difficulty was usually modified or completely relieved following operative removal of the fibroid tumor, as well as the startling fact that in most of the cases terminating unfavorably the bad result was directly due to advanced cardio vascular changes rather than to death from purely surgical causes has, for a long time, been a source of concern to surgeons and gynecologists.

Kasprczik in 1881 first called attention to the intimate connection of heart disease and fibromyomata. Rose in 1883 observed that in slow growing myomata secondary degeneration and atrophy of the heart muscle occurs. Hoffmeier studied at autopsy many of these hearts and found that they revealed fatty degeneration and brown atrophy of the myocardium. I will not weary you with all the references in the literature but of many hundreds of cases studied by several workers it was found that 40 to 46% of the myoma cases analysed showed heart complications. The heart disease is characterized by relative insufficiency resembling a myocarditis but not entirely identical with it. In fibroids without abnormal bleeding, brown atrophy was found, while in fibroids associated with severe bleeding, the condition was one of fatty degeneration of the myocardium.

It is, of course, going too far to say that all cases of cardio vascular disease associated with fibroid tumors are due to the tumor, for there are other diseases and conditions that may upset the cardio vascular system. Or, indeed, the cardio vascular system may have been upset before the incidence of tumor formation. However, it must be admitted that the relationship between heart disease and myoma is of such frequency that the "myoma heart" must be recognized as a real entity.

According to Winter, the cases most likely to be favorably influenced by the removal of the tumors are those dilatations and myocardial degenerations due to prolonged hemorrhage and the consequent anemia. Considerable importance is attached by Cumston and Heywood Smith to the mechanical influence of back pressure on the kidneys and the resistance to the circulation produced in the hard unyielding substance of the tumor. It has been claimed by others that there may be a chemical basis for the changes in the cardio vascular system, a toxemia being produced analogous to that found in Basedow's disease, the degeneration of the tumor producing a protein toxin capable of affecting distant organs. Others, have mentioned the probability of a common cause of the two conditions producing on the one hand a fibrosis of the muscularis of the blood vessels and on the other fibromyomata of the uterus, thus suggesting that back of the whole question lies a common endocrine thyro-ovarian disturbance. McClellan strongly favors the chemical basis as a toxemia arising from muscle extracts released from the tumor. This theory is supported somewhat by the experiments of Patta and Decio, 1911, who injected extracts of myomatous growths into lower animals and observed disturbances of the pulse, lowered blood pressure and cardiac irregularities.

At any rate the existence of the myoma heart and the associated renal changes as well as other conditions of pelvic pathology should be borne in mind by the internist always when treating women. The internest should not be content to go on treating impaired hearts and the cardio vascular system, alone, if fibromyomata or other pelvic disease be present, but to aim to discover it early and provide for its prompt removal by surgery. The internist and the surgeon should work hand in hand and even after the removal of the trouble the patient should be kept for a certain length of time under the careful observation of the

medical man, until the equilibrium has been restored in the heart, kidneys and arterial system.

THE NEGLECTED LATENT FACULTY.

By STEPHEN HARNSBERGER, M. D., Warrenton, Va.

Stepping Beyond Precedent. Back in 1877 when I located for practice, I determined to seek knowledge from every available source. Therefore, in addition to our regular journals, I read Homeopathic, Eclectic, Watercure, Thompsonian, and other irregular literature that could reach me by mail. I was ridiculed to be sure but I never lost my grip on that purpose; and have not lost it yet. The great Thomas Jefferson once said that he never talked to even the most ignorant person without learning something. I was out for learning and I have not lived to regret it, though I have not evened my full desire,

> "But know that in the soul
> Are many lesser faculties that serve
> Reason as chief." (*Milton*).

The wisest are not so always. Several years ago a fast freight train was derailed at Bristow, Virginia. The cars were piled one upon the other, having gone over a very high embankment. Though the able superintendent and skilled wrecking crew had worked for hours, they could not budge one car which was necessary before they could clear away the debris. An old farmer who was present said, "I can tell you how to do it." The superintendent told the writer that he felt his face get warm and the impulse was to say to the man that when he wanted advice from an ignoramus he would ask for it; but on second thought he said civily, "Well, sir, kindly tell us." The man told them what he wanted done and how to do it and, when everything was arranged, how to start the engine. They did so and the car was moved easily and at once. This little "mind trick" that the trained railroad men did not know saved the day and taught them a valuable lesson.

Years ago on the Western plains and miles from a terminus was a siding only long enough to hold one car. Two long material trains met there and though the experienced train men after tedious hours could not figure out how it could be done, a little ragged boy standing by timidly volunteered to say that he could show them. He got some straws, placed them on the ground and demonstrated to them how to do it. In both these instances the *latent faculty* was to the front; railroading was the better for it. Such valuable lessons are rare in the business world and they are growing less and less among physicians. Education too often gives mere verbal refinement, instead of substantial knowledge.

With Faith and Fortitude. In my early practice, when yet a boy, an elderly married woman asked me if I could rid her of rheumatism. I told her what the celebrated English Professor told his former pupil when he asked him what was the best treatment for rheumatism. The old physician patted him on the back and said, "Six weeks, my boy, six weeks." But the six weeks' advice did not shift the case. She insisted on my taking it. I at once reasoned that it would be foolish for me to do what her former physicians had done. I knew the conventional treatment of rheumatism and felt that it would not do more for me than it did for them. So I concluded to switch to something different and if that failed to try something else. At ten o'clock, the time of day she always felt best, I had a large tub of hot water put in her bedroom, an open bottom chair was placed in the tub for her to sit on, then she was wrapped in a heavy woolen blanket fastened securely about the neck to keep in the heat, and now and then hot stones and irons were put in the water to increase the heat; and when she had been made to sweat profusely and the blankets removed, she was at once enveloped in a sheet wrung out in fresh spring water, put to bed and covered with ample blankets. She would become comfortable and drowsy in a few minutes, sleep quietly for from two to four hours, and awake free from pain. Elimination and diet did the rest. She was cured and perhaps permanently, as I never heard of any return of the trouble during the several years I resided in that section.

Perhaps a Small Spark May Lie Hid. J. L., aged 40, Barterbrook, Va., 1878. Fever, cough, expectoration, dyspnea, and unable to lie down or take exercise. Had been treated for "bad lungs and heart." Was apparently in a very serious condition. I was tolerably fresh from some training in physical diagnosis and could not agree with the previous opinion in the case. Some indefinite resistance under right costal margin. Believing that all his trouble came from a badly functioning liver,

I gave him a few large doses of English calomel at bedtime, followed by salines the next morning. He was out and about in ten days, continued to improve and was an industrious wood worker fifteen years later, when I lost trace of him.

Mrs. K., Fishersville, Va., during January, 1880: Was called to see a baby, in absence of the family physician. Found it with bad bronchial cough, sinking in above the clavicles, and crying constantly. Had not slept that day or the previous night. I made a jacket of cloth lined with cotton batting, wrung this out in very hot water to which I added a little turpentine, enveloped its chest in this, and opened the windows to let in air, as they had the room suffocatingly hot and close. In a few minutes the little fellow was eased, went to sleep and slept the rest of the night. The next day found him better and the improvement continued on the external applications and fresh air. This seemed to greatly please the old folk, as the grandmother said to me "Just to think that you didn't give a thing to the baby and still you made him sleep all night!"

She was so well taken in by my not doing anything, that she essayed to make known her own troubles to me. She had no comfort day or night on account of pains in back and constant irritation of kidneys and bladder—too scant or too great flow—and always had this trouble in the winter months. Neither husband nor wife could read. They were hard workers and of course went to bed very early and remained abed through the hours of the long nights. She had been treated every winter for rheumatism. After getting the history well connected, I was firmly of the opinion that the pains and other discomforts came from too long hours in bed. Therefore, I gave her no medicine but had her sit up five or ten minutes later every night until she reached eleven o'clock; and never to retire until that hour or later during the short days of the year. She did this and very soon improvement was noticeable and later on she was free of all pains and other uncomfortable symptoms. She adopted this precaution each winter thereafter and without a return of her former sufferings.

Very frequently in selected cases have I had reason to advise less hours in bed and usually with benefit to the patient. Regard each patient as a separate entity. Treat the patient and not the symptoms. If you want a thing done right, you must put the burden on yourself—there is no exchange. It is self—self exclusively; not the memorizing mind but the reflecting mind solves the intricate problems. It is the mental probing.

Fly With Your Own Wings. Mrs. M., Savannah, Ga., aged about 55, came to me for treatment during the winter of 1917. Her very competent physician, as was the usual plan of handling myocardial asthenias, had her on rest, and heart sustaining remedies. She was then taking pretty heavy doses. She was weak, emaciated, and had a very uncomfortable and anxious expression. After a couple of visits, I asked her if she knew the invariable result of the continuous use of stimulants, She said she did and volunteered the reply "that stimulants lost their effect by use and if continued it took larger and larger doses to maintain the good results." Then I asked "What are you going to do when the doses required get too large for safety?" Of course she could not tell and her answer carried nothing hopeful, because she remarked—"I guess I'll have to die." And it did look somewhat that way. I reassured her, however, by saying that I had already made up my mind to restore her to at least comfortable health by a much more pleasant course of treatment. First, I wanted her to take life easy and feel that she was going to do without stimulants. Second, that I was arranging to have her eat and enjoy what she ate. Third, that as soon as she could eat and digest agreeable food she should begin to lessen the quantity of heart stimulants every second or third day until she found she could throw away the bottle and go on the restoration made by food alone. In eighty days from the day she began with more food and less medicine, she discarded drugs. She came back for the summer a few days ago looking well and feeling well. She is still living and in very good health.

The universal belief that these heart faults must all depend on cardiac stimulants carries little show of excellence or umbrage of reason on its side. Do your own thinking. Get the constructive idea that will fit your patient. The doctor who is taught and can not see farther than his teacher is not only incompetent but is potentially a menace to the community in which he figures.

With What Mind or Intention. We as a profession have done well but we have not yet paid our score.

> "Your scope is as mine own,
> So to enforce or qualify the laws
> As to our soul seems good."

Not Anything Too Much or Too Far. Justification of the modern high standard of medical education holds good only so far as it does not repress the function of thought—the greatest evil tendency of modern educational life. One but has to give passing notice to the manner of teaching in most of our public schools, high schools and colleges to understand why our boys and girls turned out from such places rarely fill acceptably the important positions in life; and why the court dockets are cumbered with cases criminal and otherwise. It is in much part, I am led to believe, because our young people are made to consider their brains as bins for storage purposes rather than dynamos of thought. So when they come from college they are crammed full of the things taught but never a bit do they know about the guiding, restraining or the developing and expanding value of thought.

Poor in the Midst of Wealth. Intellectual cultivation by means of the group system in vogue in our schools to-day is, we admit, helping to acquire knowledge by rote and making it easier to hold intact what is read. That is of use and some value, but it is the weakest point in any system of education and tends to materially cut down the amplitude of opportunity, which is only unlocked to reason and thought, because the obstacles we meet with at the bedside are of a more or less obscure nature and their elucidation and correction can only be met through the conserving agency of thought and reason.

The most perfectly memorized symptomatology will not square the immediate exigency of the case. This every conscientious experienced physician will recognize. It takes something more—that natural or cultivated latent faculty of being able in emergencies to ungarner the essential expedient. It is seldom necessary to "fall down" if *devotion and thought make common interest.*

Touch the Thing With a Needle. The prescribed standard of education is immobile and molding in character. It binds too much to the type and, therefore, lacks elasticity, liberality and development. Teachers, I opine, should take extra pains to put what they teach in such a way that students must need think more and memorize less. This habit will fit them better for research bedside effort—for studying each patient and not being so intent on being guided by any set of symptoms, which rarely conform to the conditions we meet. What you do, do volient, not obedient. Good fortune is the companion of virtue and courage.

With What Purpose. It is not easy to make clear what I mean and it is not my intention to dictate. I am interested in the better education of medical men. I believe the members of the profession who have known me intimately for years will acquit me of any ulterior object in writing this paper. They know full well the ethical lines on which I have always worked. And I want it understood that it is *for the good of the suffering whom we serve* that I put in this word of caution and suggestion.

"To lapse in fullness is sorer than to lie for need." Miss S., aged 18, of Maryland. matriculated at one of the best schools in this State. Early in the autumn she began to feel badly, with appetite on the wane. One of the best physicians in the town attended her. After visiting her home at Christmas, she returned to her classes. The doctor continued to treat her for indigestion. His reports stated that she was doing very well. About May she was sent home—rather to my town where her mother was then staying. I was called to look her over. I found that she had tuberculosis and even then past hope of recovery. My report to the mother was like a bomb explosion unawares. She lived for a couple of months and then yielded to the inevitable wrong diagnosis. Worse yet, the mother contracted the disease and died twelve months later. This unfortunate and unnecessary mistake happened twice in the same family and with the same physician in a large city in Virginia. The physician was one of the best educated and generally informed men in our State and controlled a very large practice among the wealthy class. He had a charming and engaging personality.

These mistakes are happening much too frequently all over the country. Right in my town are patients who have gone to heralded specialists and been treated for tuberculosis when no test given has backed up any

such diagnosis—*and it does not stop here.* Now I mention these unhappy casualties because they were in charge of medical men of experience and the very highest educational attainments. I am using this fact to help verify the point I wish to make sure and clear to every unbiased person who may stumble on this paper and worry through its reading. I am up in years; have spent a lifetime ministering as best I could to the physical and mental weaknesses of both country (mostly country) and town people; and I have rubbed up against many of the "A Ones" from the great medical centers of this country and who I rejoice to say are my friends. Much that I know to-day was made known or suggested by what I heard or saw them do. There is nothing more worthwhile than the new ideas squeezed out of or from the suggestions that come to us from hearing others talk and do; *and particularly from studying our patients at the bedside. These quarried impressions are the untaught values that fill in to save suffering and life.*

The Drama of too High Education. Education, in the sense inferred from the over-exacting educational requirements adopted by most or all the States, means that which is gained by instruction—the cramming of the head and not knowledge by understanding. One can know a thing and yet not understand it, which is not useful or safe knowledge when applied to healing the sick. Many of the best educated members in our ranks are almost impotent at the bedside. They talk charmingly and explain plausibly but, subjected to the test, the patient does not improve, grows worse, or else dies. Something like "the operation was a success but the patient died." This is a very frequent "catch" that finds its way into the columns of our daily and weekly newspapers. What is the actual meaning when brought down to the crucible of fact and reason? This is intended for the audience with barred doors.

It is the easy "slipping out" and much too frequent after the unfortunate vital surrender. It means in many instances, I fear, not that the knowledge was at fault but simply that the understanding was not what it should have been. Understanding means more than the fact that an operation or the giving of drugs is an absolute requirement in the case. That may be easy and clear to an outsider—it means in the hidden cases (the usual cases will get well without help) that exceptional trait which by nature or cultivation through devotion (it can come from no other source) of intelligently fixing in mind the patient as he is and other than the diagnosed surgical or therapeutic necessity; in other words, seeing the patient parentally, mentally, socially and with all other actual and injected attendant circumstances. It is too late when it is over; and curricula or the higher education fails to meet it. For this saving grace of understanding cannot be taught,—it is of a more exalted nature; inspired by devotion, edged by observation and whetted by experience, it gives the judgment the ensemble picture of the whole that alone saves the patient in the hazardous condition. View it as you may, deny it as you will, but the fact remains that you cannot offset it by argument or sneer.

Great is the Force of Habit. As the sapling, is bent, so will the tree grow. Just, as a rule, will the highly educated graduate grow and stay. He can perhaps more readily drink in what others write and say by reason of his habit of memorizing books, but he has been feeding on books so long that it is only natural for him to continue to graze from the same pasture and not be attracted to the more necessitous roughage filling that is ground out from the inquisitive study of the patient himself. Know the patient. Get the mental X-ray of him.

My early practice was among sheep raisers. Some had one, some two and others three hundred. I frequently rode into the field with the owners. I have seen them almost as soon as we entered the field say "my sheep are not all here." We would then ride over to a nearby neighbor's field, inspect his flock and virtually at once he would say, "That's my sheep." And they never missed it. Now every sheep was of the same breed and every one of them was to me exactly alike, yet the sheep man could tell them, pick out his own, and I never saw the time that he did not do so on the first and quick survey. He could not tell you how to do it but he could do it because of his interest in the sheep, his constant study and intimate association with them. So it should be in our bedside professional work.

Mr. B., aged 40, Knoxville, Tenn., 1886. Had had sick-headache every Sunday since he could remember; it never failed. I first gave

special attention to breaking the habit. Succeeded in moderating the gastric upset the first week after he started treatment. This brought forth the encouragement that is the integral part in managing these intricate katabolic conditions. He was apparently well in five months and had not had a return twelve months after he left off treatment.

Mrs. H., aged 60, 1887. Neuralgia of the eyes. Had suffered intensely for a couple of years. Her physician finally advised her to go to Baltimore and have at least one eyeball removed, as her only hope of recovery. She applied to me through the advice of a prominent lawyer in her county of Rockingham. When her son consulted me, I could not go to see her. The best I could do at the time was to send her some palliatives, and write out some directions as to rest, diet, fresh air, etc. I did not see her for several weeks but kept in touch with her progress by means of the mails. By having her more or less comfortable, I soon got firm in her confidence; and then the way was delightfully paved against future stumbling. She got well and lived a number of years in comparative comfort except perhaps for the intervening vagaries incident to declining years. Elimination was conscientiously kept in mind and practice, ridding her of the intestinal poison, then nourishment—that's all.

A Suffering Person is a Sacred Object. We have heretofore paid too meager attention to the part played by infections. Early in my professional career, I met constantly with what was then termed neuralgia, principally of the forehead, eyes, back and stomach. To explain in few words, I shall give one or two case histories:

In 1886 an old lady of Newmarket, Virginia, called on me for neuralgia of the eyes of thirty-five years' standing. She had sought aid from many physicians. I told her that neuralgia was not in my book of practice or rather was not the name of what I was going to treat. Understanding the importance of time as the main factor of success in handling such patients, I bound her down to some months' effort by requiring her to pay a lump sum whether she completed the time obligation or not. I did this in all cases of long standing, and it worked miracles. A few years later I got another patient from the same town but her pains were about the stomach. She finally recovered. The entire program in both was the diminution or exclusion of milk, meats and other acid-forming products from the dietary, elimination persistently pursued, and a combination of drugs (morphine excluded) along as required to assure ease and comfort. The matter of comfort, which I find many physicians seem to lose sight of, is absolutely one of the most valuable helps in neuralgia and all other discomforting physical conditions. It cheers the patient and makes active the functions called into play in the effort to restore the strength. And it does more: it elicits the abiding faith which puts the patient's efforts on the plane of one's own intention. It is a winning card. It creates hope and hope fixes the gait and grateful conclusion. These things outweigh educational acquirements and scientific knowledge; but working forearmed with the edged equipment mentioned, reason gives assent.

Let it Pass for What it is Worth. It is not enough merely to know—it is the proper application of what we know that expands to utility. We all know enough but from some unfortunate fortuity of circumstance, as it were, we do not oxygenate our ideas, hence they lie dormant, so that what we know is without any reciprocal equivalent. When something as in the hidden case intensifies interest, heats the brain centers to unusual activity, it brings to light what has been stored there but was not in the ripened fruitage, available for use. The reciprocal relations of doctor and patient are only proportionally active when the doctor takes in *the underlying condition that leads along to the* disturbed feeling or dysfunction called disease.

The Key to the Mystery. Any one who studies these cases and gets an intimate acquaintance with them should, in the majority of instances, at least, recognize that the existence is usually determined by some metabolic fault; and in my experience, judging from cures obtained, the crux of the dyscrasia lies somewhere in the gastro-intestinal route. Correct that error and dominion over disease is your grateful return. It simply acquaints one with the kinetic force of thought, the kinetic energy of thought in action; of the importance of more closely and carefully looking into, through, and beyond every seemingly complicate case. *Hunt the pre-remote cause and the post-remote effect.* This abstraction is the

doctor's imperative duty and the patient's fundamental right. It is the juggling that brings diagnosis into ill-repute. The chief difficulty is our apparent inability or willful neglect to make use of our faculties and opportunities which are every day brought before us. It is not so much the opportunity of education, however, for as Bacon has well said "A wise man will make more opportunities than he finds."

It is importunity, earnestness; the taking in of the opposable is more opportune to our needs than the acquired symptoms familiar from curricula. Illiteracy does not mean ignorance, as many are prone to think, nor does literate mean knowledge or understanding; for what the literate know is mostly of the past. The main object in the practice of medicine, you will grant, is to know at the time: and right here is where the *latent faculty comes into play and memorized facts become palsied.* Now it seems to me that we have increased our standard of medical education to the point where it requires students to perform a cumbersome obedience; and about where it is well to make a halt, modify the fashion of teaching, or weaken the good it was intended to do. Already it is *ridding our ranks of the "anxious" young men with high desires and humanizing devotion*—the ones who heretofore have ended in world-wide reputations as the greatest teachers and most successful practitioners and surgeons. We want them because we need them but they see no way open to them to "pay the price." And it is naturally hardening the feelings of those who do pull through. The trend is toward grouping, expanding, *dictating, controlling;* the personal factor, *individuality*, is relegated to the background. It is called the higher education, progress, better commodity at a lessened cost—evidently meant to trap the innocent—the patient suffers the contrary; and the usually gouging price makes him not forget it.

Apollo Hears When Invoked. But Apollo will not answer so long as the greed of manufacturers willingly does the bidding of man's false desires. Much of the blame for the burden of gastro-intestinal dysfunctions of the present time, in the writer's opinion and as published before (*Virginia Medical Semi-Monthly*, November 13th, 1914), is in the way our food products, especially cereals, are manipulated to please the eye; the polished rice, the whitened flour, the bleached sugar and the excessive refining of numerous other articles of diet *rids them of the ions and vitamines, and roughage*, which we now realize are the *sure and only factors* in supplying nutriment and the required functioning of the organs concerned in building and renewing the tissues and eliminating the products of waste. Whenever these functions are disturbed or absent, especially for some time, there must of necessity follow some functional or worse impairment and possibly some irreparable damage, especially to the liver.

To get at any fair estimate of the varied and gross damage in this respect, is to give favorable thought to the subject. It will astonish anyone who tries the plan of earnestly and carefully studying the matter. It can bring on anything from toothache to amputation. There seems no limit to the dystrophic disorders that can proceed from faulty foods faultily eaten; and, we might add, as long as humans lamblike swigg the sift-drink teat. These faults well adhered to, are strongly at the bottom of many, if not all, of our ailments. The principal cause of disease in infancy lies in food and drink, and it continues into adult life. If we would give less attention to diseases and more time to elucidating the ways to preserve health, we would be more in accord with common sense and reason.

The Burden Which is Well Borne Becomes Light. Do not read just what you think you need and like but consider what you do not want and do not like. Broaden your vision, expand your efforts; it will make you reach out and grasp the better, if not, bigger things. Leave the narrow gauge of memory and board the broad gauge of thought for awhile and see how much it will add to your success and pleasure. Perfection was never intended, nor was it appointed that we should halt at doing well. The Garden of Eden was perfection and it lost out. To be calmly satisfied means decay and decay is the beginning of the end of everything earthly. *Thought and work alone can fill the vacancy that registers failure and despair.* Too high educational requirements tend to self-complacency, dwarfing development of the best, usually *latent qualities*, the crowning glory of which is the *latent reserve faculty*, innate in every indivi-

dual and which simply awaits the awakening—leading out.

The crude apple diverted Eve. To accept compulsory high education as the rule of thought and conduct forcibly minimizes devotion and freezes emotion, when it is emotion, the mainspring of devotion, which alone gives zest to the zeal that never tires. It is like turning away the water you need to grind the grist.

MANAGEMENT OF BREECH CASES OF LABOR.*

By JETER R. ALLEN, M. D., Marshall, Va.

To manage intelligently a breech presentation, it is first important to know the character of the case, whether it is simple or mixed. Simple is when the flexion is at the hips, and the limbs are in complete state of extension, the legs as a whole in apposition to the front of the fetus. In mixed the thighs are flexed as in simple, but the legs are flexed at the knees and the dorsal surfaces of the limbs are in apposition, the fetus being in a squatting position. We may also have the presentation of one leg, the other limb being in the simple or mixed position. This is nothing more than what might be termed a complication to the presentation.

We should also take into consideration the etiology which includes faulty attitude on part of the mother, especially such as relaxation of the abdominal wall often present in those who have previously borne children; deformities of the uterus and pelvis, many of which I will not discuss; prematurity on part of the fetus, as well as dead fetus and multiple pregnancies. The positions in all labor, in order of frequency, are:

Left Sacro-Anterior, L. S. A.
Right Sacro-Anterior, R. S. A.
Right Sacro-Posterior, R. S. P.
Left Sacro-Posterior, L. S. P.

MANAGEMENT: When called in time, and we have reason to expect that from faulty position there is a chance that we will get a breech presentation, we should by external manipulations endeavor to convert it to a cephalic one, and by careful observance maintain it in this position until engagement has taken place. I mention the above fact of when being called in time for the simple reason that often, and especially in the rural sections, we do not know that Mrs. A. or Mrs. B., wants our services until we are actually called to attend the case, and at our arrival we find labor in progress. Should we be fortunate enough to have been engaged on the case beforehand, we should observe the mother at intervals and, by so doing, we may be able to secure the proper position and maintain it there until the time of gestation, and pat ourselves on the shoulder that we have carried out our purpose, but it is worth trying.

When labor does begin and we find that we have a breech case on our hands, do not be too much concerned and be too vigorous in trying to change it into some other presentation, for, all things being normal. I had rather take my chances with a normal breech case than lots of the other complicated ones. Failing after reasonable external manipulations to accomplish our purpose, our next thought should be, Is this a fully matured fetus? Is it alive? Is the mother's pelvis deformed, rendering it improbable that she could give birth? Our first consideration is the safety and life of the mother and the next a live baby. Agreeing that all is normal with the expected mother and baby, and we simply have a breech case to deal with, it is best not to tell the mother that the child is not in the best of positions; let her find it out herself, which she usually will after labor has terminated, and then she will not care whether it was a head-on or backward procedure.

Knowing that the breech is not as complete a dilator as the head, we should endeavor to prolong the first stages of labor to afford plenty of time for the pelvic tissues to relax and dilate for the after-coming head. If the pains are too vigorous during the first stages, we should instruct the mother not to use her voluntary muscular forces; this you can do by explaining to her that she can do no good at that stage of the game or rather will tire herself and then would not be in position to use her muscular efforts when they will help later. Often these patients have been attended before by a midwife who has taught them that they must bear down (as they call it) every time they have a slight pain. If she is a woman of reasonable intelligence, she will take your suggestions, and that of itself will be all necessary to control

*Read before the Warren, Rappahannock and Page Counties Medical Society, at Sperryville, Va., August 8, 1922.

pain. But, if they persist too strongly, you might modify them by the use of chloroform, given with caution, or small doses of morphia might help. However, I do not advocate too much interference, for I fully believe that interference often has done more harm than good.

Endeavor to preserve the membranes as long as possible as by so doing you will obtain better and more uniform dilatation than you would should they rupture early. To preserve them, use same methods as in reducing the pains, make few examinations, and keep the patient quiet in recumbent position. When actual rupture of the membranes has occurred, observe for signs of weakness in the fetus and be ready for quick action should indications present. By external manipulation of the fundus of the uterus through the abdominal wall endeavor to maintain complete contraction which will keep the head in the flexed position and also prevent the extension of the arms of the child.

Aim to protect the perineum in all cases and, as soon as the umbilicus appears through the birth canal, notice that the cord is pulsating normally and if possible place it in the sacro-iliac notch to prevent pressure; avoid its being subject to tension for by this you may prevent premature separation of the placenta, rupture or tearing at the umbilicus, or retarding the circulation through tension.

Have a warm wet towel handy and as soon as the trunk is being born wrap it in the warm towel to prevent the stimulating effect of the air of the room causing respiration before the head is born. Before the head is expelled, support the trunk well to prevent pressure on the neck. As the chin appears over the pelvic floor, elevate the trunk and assist expulsion of the head by firm manipulation over the pubes. Do not pull on the trunk. Much good can be done just at this time by instructing the mother to use her muscular force of expulsion. All of the above refers to a normal breech case, but often complications may arise and should be properly and promptly dealt with.

At the beginning of the case, should we find a large or deformed child and deformed pelvis on part of the mother, rendering labor unfavorable, we should first consider Cesarean section. If the fetus is immature or dead, our technique would be governed accordingly. Should the arms become extended, they should be immediately brought down. To do this, bring down the posterior one first, by raising the trunk and passing the index and middle finger of the hand whose palmar surface corresponds to the dorsal surface of the child into the birth canal and following up the child's back until the scapulae are reached, then down the back of the arm until the elbow joint is reached, and then bring the arm down over the face of the child The procedure is now reversed and the same steps carried out in bringing down the second arm. Do not use too much tension for you might get a fracture of the humerus. If the arms fail to maintain this position, a sling is recommended to keep them down, but I have never found occasion to use it.

Should the head remain in the transverse position in the pelvic outlet, correct it by placing two fingers on the occiput and two on the malar bone, or one finger in the mouth. Supporting the trunk, rotate the chin posteriorly: do not attempt to rotate the head by twisting on the trunk. Should the head maintain the transverse position in the upper part of the pelvis, endeavor to bring it down by suprapubic pressure and then follow the above procedure. If the head does not maintain proper flexion at the brim of the pelvis, try by firm suprapubic pressure to obtain the proper flexion and maintain in this position until deep in the pelvis. If incompletely flexed at the pelvic floor, place one finger in the mouth or to either malar bone and with firm upward pressure at the back of the occipital bone bring to complete flexion, for if the head does not maintain flexion the chin will get inpacted somewhere in the birth canal and render labor impossible so far as the life of the child is concerned: for the head must be born inside of ten minutes from the birth of the shoulders to save the baby.

If the cord prolapses, replace it at once or, failing to do so, attempt to terminate labor promptly; this may be easy if one foot is already presenting, but if both are in the simple presentation, you may obtain your object by hooking the fingers in the groins and making traction, but be careful not to use too much traction without also following down the fundus of the uterus, for you may cause extension of the head and matters are then worse than before.

There are many other complications that may arise but these are the main ones to look for and I will not enter into any further discussions. This paper is very incomplete but I hope I have brought out some points which, while not new, we must look out for and at some time must all handle. The usual strict asepsis and repairing of lacerations, as in any other case, should be carefully followed.

SUMMARY.

1. Ascertain all abnormalities as to mother and child.
2. Gain the confidence, if possible, of the mother.
3. Do not interfere with nature but assist when indicated.
4. Correct complications as they arise.
5. Should all go well, thank nature rather than assume all the credit yourself.

NOTES ON RECTAL SURGERY.

By E. H. TERRELL, M. D., Richmond, Va.

While the sigmoid flexure, rectum and anal canal have very definite boundary lines, it has become customary, except in very scientific discourses, to designate all disorders of these parts under the general heading of rectal diseases. Such a classification, of course, may not be anatomically correct, but it is simpler, and to save confusion it is as well probably to follow the usual custom.

According to the latest editions of Gray's Anatomy the rectum extends from the attachment of the mesentery in front of the third sacral vertebra to the level of the semilunar valves of Morgagni. It is below this line, between it and the skin margin, that the great majority of the so-called rectal diseases are found. This is the constricted outlet of the intestinal canal, and is about one inch in length. From the proctologist's point of view the dividing line between the rectum proper and the anal canal, that is the level of the anal valves, is a most important one. Above this line there are few, if any, sensory nerve fibres, while below it they become more and more abundant until the skin edge is reached. In operative work in this region, particularly under local anaesthesia, which has become rather prevalent, a knowledge of this fact is very helpful. Also, what might appear as identically similar lesions above and below this line will cause entirely different symptoms. For instance, an ulcer in the lower ampulla of the rectum will almost certainly produce a diarrhoea, while a similar condition in the anal canal will cause spasm and pain with a retardation of the fecal movements. Because of the abundant nerve supply of the anal outlet and from the fact that it is surrounded by strong muscular bands, the amount of discomfort and pain often seem out of all proportion to the extent of the pathology found. On the other hand, the sigmoid and rectum having a limited sensory nerve supply, diseases incident to them are accompanied by little or no pain. The practical importance of this is that the lesion causing rectal pain and discomfort will almost invariably be found in the outlet. In a search for a painful lesion it is useless to subject the patient to a high rectal examination, as I have known to be done often, when usually it may be seen or felt from below without the aid of any instrument.

In doing rectal work, a carefully gotten history is most important. In this, probably more than in any other branch of surgery, the findings should explain the symptoms. In other words the examination is not complete until the cause of every symptom is found. As an example, some time ago, a patient was referred to me who had pain in the rectum with a slight discharge of pus. He, also, had several bowel movements during the day. Examination showed a small perineal fistula with an ulcer at the internal opening. These, of course, would not produce a diarrhoea, but would tend to constipation. A proctoscopic was done and a large ulcer just below the recto-sigmoidal juncture was found. Before operation for the fistula and anal ulcer the patient was told that treatment later for the rectal ulcer would be necessary, if a complete cure were expected.

Analyses, Selections, Etc.

Pancreatic Extract in Treatment of Diabetes Mellitus.

In a series of articles appearing between February and June, 1922, from the Departments of Physiology, Pathological Chemistry, and Medicine, of the University of Toronto, the use of pancreatic extracts in the treatment of diabetes mellitus is described. This work begun by Banting and Best[1] has been de-

veloped by them along with Collip, Campbell and Fletcher[2] to a point where they are able to report some striking clinical results. The earlier papers are summarized by Professor J. J. R. Macleod[3] in part as follows:

"Briefly, the most significant of the results which have been obtained are as follows: Subcutaneous injection of the extract into normal rabbits causes the percentage of sugar in the blood to fall, and when this reaches a certain level (about 0.045 per cent), perfectly characteristic symptoms of a convulsive character appear and, if left alone, the animal passes into a comatose condition, which soon ends in death. If a solution of sugar be injected subcutaneously when the symptoms appear, the animal immediately recovers and may remain perfectly normal or pass again into the convulsions which may be removed a second time by injections of sugar. Many observations have convinced us that these symptoms are definitely related to the lowering of blood sugar—they may indeed be called hypoglycaemic convulsions—and this is all the more interesting in light of the work of F. C. Mann, who found similar symptoms to develop in dogs when the blood sugar was lowered to about 0.04 per cent by isolation of the liver from the circulation. * * *

"Not only is the blood sugar lowered in rabbits that are normal, but also in those rendered diabetic by any of the experimental methods usually employed to bring this about. These are puncture of the floor of the fourth ventricle (Piqure), asphyxia, poisoning by carbon monoxide gas, ether, or adrenalin. None of these causes hyperglycaemia in rabbits after injecting them with sufficient amounts of pancreatic extract. There may occasionally be a slight increase in the percentage of blood sugar, but never to anything like the extent usually observed without extract. The animals used for these experiments were always well-fed with carbohydrates and the glycogen content of the liver determined. The importance of this result is that it shows us that even the purely experimental forms of diabetes have much in common with the clinical forms. * * *

"Determination of the percentage of glycogen and of fatty acid in the liver, heart and blood of diabetic animals either injected or not injected with extract, has revealed the fact that extract entirely alters the distribution and amount of these substances. Thus, the liver of a pancreatic diabetic dog never contains more than a very small amount of glycogen, even when the animal has been ingesting large amounts of carbohydrate; on the other hand, this organ under these conditions is heavily loaded with fat. When extract is given, however, a very large amount of glycogen (over 12 per cent) appears in the liver and the amount of fat coincidently declines.

"In a normal person or laboratory animal fed on carbohydrates the quotient (R. Q.) rises nearly to 1.0, but in a diabetic patient or animal, it fails to do so and may be as low as 0.65, its height varying with the severity of the disease. When pancreatic extract is administered along with carbohydrates in diabetes, on the other hand, the quotient rises as in a normal person, clearly indicating that utilization of carbohydrates in the tissue has been restored. * * * *

"It is shown that an extract of pancreas can be prepared capable of removing all the cardinal symptoms of diabetes both in animals and man. Thus, it caused the blood sugar to return to the normal level, the sugar of the urine to disappear, acetonuria to vanish and the respiratory quotient to rise towards its usual level. Not alone were the objective symptoms relieved, but the well-being of the patients definitely improved. The extract was administered subcutaneously. These clinical observations would not have been warranted had Banting and Best not previously shown by experiments on diabetic (depancreated) dogs, conducted in the laboratory of the writer, that in one animal at least, by daily injections of extract, life could be prolonged far beyond the time during which untreated diabetic animals usually live. * * * *

"Many other corroborative results of the remarkable potency of pancreatic extracts have been gathered, and great attention is being given to the best method of their preparation in bulk. It has been thought advisable not to publish these methods in detail until they have been thoroughly worked out and the proper dosage determined; for it has been found not only that toxic symptoms may follow the administration of improperly prepared extracts, but that the antidiabetic effect is readily lost by apparently trivial deviations from the prescribed method. This large scale preparation of the extract is being done in the department of physiology by the aid of

funds granted by the Connaught Laboratories of the University of Toronto.

"In the light of these various types of evidence, we feel justified in expressing the belief that it will be possible by administration of pancreatic extract, to treat diabetes in man much more satisfactorily than has hitherto been the case. Dietetic control must no doubt still remain an important feature of treatment, and will probably be all that is necessary in the earlier stages of the disease, but in the later stages, and in the various crises that are otherwise unmanageable, it is hoped that administration of extract will prove of value. What other therapeutic uses the pancreatic extract may have, remains as yet undetermined."

References

1. Banting, F. G., and Best, C. H.: The Internal Secretion of the Pancreas: Jour. Lab. & Clin. Med. VII, No. 5, February, 1922. Pancreatic Extract; Jour. Lab. & Clin. Med. VII, No. 8, May, 1922.
2. Banting, F. G., Best, C. H., Collip, J. B., Campbell, W. R., and Fletcher, A. A.: Pancreatic Extracts in the Treatment of Diabetes Mellitus: Canad. Med. Asso. Jour., March, 1922.
3. Macleod, J. J. R.: Pancreatic Extract and Diabetes; Canad. Med. Asso. Jour., June, 1922.

J. H. S.

Studies on the Therapeutic Effect of Bacillus Acidophilus Milk and Lactose.

Following up the investigations of Rettger and Cheplin, in which was described the satisfactory treatment of chronic constipation and diarrhea, with milk fermented by B. acidophilus, reinforced with lactose,—Kopeloff and Cheney have applied this treatment to institutional psychotic patients. Two groups of subjects were used: Seven controls, mentally normal; and seven female patients classed as dementia praecox and manic depressive. The usual daily administration was 1,000 c.c. of B. acidophilus whole milk and 300 gm. of lactose, half the amount being taken between dinner and supper, and the remainder between supper and bed-time. To obtain the most palpable result the milk was incubated at 35° C. for twenty hours.

In both the mentally normal and psychotic subjects marked relief was obtained from chronic constipation and diarrhea, corroborating the work of Rettger and Cheplin. The psychotic patients showed no mental improvement which could be attributed to this treatment. The intestinal flora became changed on treatment with B. acidophilus milk and lactose. There was some doubt as to whether there was any actual multiplication of B. acidophilus in the intestine, the percentages of viable organisms excreted being very small.

Daily analysis of the milk showed that incubating B. acidophilus whole milk at room temperature was satisfactory for three or four days, after which the number of viable organisms decreased rather rapidly, and the acidity increased to the point of unpalatability. (*Journal A. M. A.*, Vol. 79, No. VIII, page 609.)

A. F. R.

Prognosis and Treatment of Tuberculosis in Infancy and Childhood.

This is a most interesting and instructive article about a subject of great importance in the care of the tubercular infant and child.

Rowland G. Freeman, in *Archives of Pediatrics*, August, 1922, states that about one-third of the cases of tuberculosis in children are of the bovine origin. Cases of intestinal tuberculosis or of the cervical lymphnodes are particularly apt to be of this origin. Among intelligent people we are especially apt to find the bovine type, for the human source is well guarded against, but raw or commercially pasteurized milk is used, neither of which is absolutely safe. In the tenements where isolation of the human source cannot be well instituted we frequently find the human type of the tubercular bacillus infecting the infant and child. Tuberculosis may develop in foetal life. One hundred and thirteen authentic cases and five hundred and nineteen questionable ones have been reported in literature. Freeman makes the following points:

(1) The younger the child the less resistance to the tubercular bacillus.

(2) The tubercular bacillus, no matter what the point of entry is, usually lodges in the bronchial lymphnodes, and from there spreads.

(3) Tuberculosis of the lungs gives an absolutely bad prognosis.

(4) There is rarely much emaciation in tubercular cases in infancy and young children. Emaciated cases are more apt to be unresolved pneumonia.

(5) The lesion is more apt to be in the lower lobe.

(6) X-Ray plates are sometimes best taken

at an oblique angle, when the shadow is thrown on one side of the vertebral column.

He then goes on to quote many cases of localized tuberculosis in which excellent results were gotten by the following treatment:

(1) Removal of large infected lymphnodes.

(2) Fresh air, out of doors, moving and cold. Cases are kept in it twenty-four hours of each day.

(3) Heliotherapy, exposure of skin to direct sun light, cautiously but sufficiently.

(4) Cod liver oil. Useful if well borne and it is usually well tolerated.

(5) A full easily digested diet.

(6) Complete rest for long periods.

Freeman's article should lead us to take more specific care of our tubercular children with the hope of recoveries in a good many of them.

W. B. M.

Bacillus Acidophilus.

Bassler and Lutz review the investigations of the acidophil bacteria and the value of their therapy in intestinal disorders. They showed that the earlier preparations could be recovered from the stool in negligible quantities only, and hence were worthless. Given with lactose they do appear in large numbers in the feces in about four days and promptly disappear when the administration is stopped. They have shown that the appearance of large numbers of the B. acidophilus in the stool does not diminish the normal number of the B. coli, as demonstrated by careful counting in a weighed unit of feces. Also that the anaerobic bacteria are not diminished.

They conclude that any benefits derived from this therapy occur only in the putrefactive type of disorder—not in the fermentative, —and that even in the putrefactive types there is no effect on the anaerobes or secondary putrefactive organisms of the gram-negative group. Finally, that the same results may be obtained by the use of several teaspoonfuls of lactose a day in a slightly longer time but at much less cost to the patient. (*Journal A. M. A.*, Vol. 79, No. VIII, page 607.)

A. F. R.

Proceedings of Societies

PROGRAM
MEDICAL SOCIETY OF VIRGINIA
Fifty-third Annual Meeting
at
Norfolk, Virginia
October 31, November 1, 2 and 3, 1922.
Headquarters—Shriners' Temple, Monticello Avenue and Freemason Street.

Dr. R. Lloyd Williams, 405 Taylor Bldg., *Chairman.*
Local Committee of Arrangements.
Registration & Information Bureau—Shriners' Temple.

OFFICERS

E. C. S. Taliaferro, M. D., Norfolk .....*President*
J. S. Davis, M. D., University .....*First Vice-President*
C. P. Jones, M. D., Newport News, *Second Vice-President*
J. B. DeShazo, M. D., Ridgeway..*Third Vice-President*
Mr. G. H. Winfrey, Richmond....*Secretary-Treasurer & Business Manager*

Executive Council

Paul W. Howle, M. D., Richmond.....*Chairman*
Garnett Nelson, M. D., Richmond.....*Clerk*

State At Large

Paul W. Howle, M. D. (1922)
I. E. Huff, M. D. (1922)
M. J. Payne, M. D. (1923)
H. A. Burke, M. D. (1923)
W. W. Wilkinson, M. D. (1924)

G. W. McAllister, M. D. (1923).....First District
R. Lloyd Williams, M. D. (1924).....Second District
Garnett Nelson, M. D. (1923).....Third District
Thos. G. Hardy, M. D. (1924).....Fourth District
R. A. Moore, M. D. (1922).....Fifth District
Hunter B. Spencer, M. D. (1924).....Sixth District
J. C. Flippin, M. D. (1922).....Seventh District
S. W. Maphis, M. D. (1922).....Eighth District
Francis H. Smith, M. D. (1924)..... ..Ninth District
P. E. Tucker, M. D. (1923).....Tenth District

Committees

J. A. White, M. D., Chairman Membership Committee
H. U. Stephenson, M. D., Chairman Legislative Committee
W. F. Drewry, M. D., Chairman Judiciary Committee
Alex. G. Brown, Jr., M. D., Chairman Publication Committee
Charles M. Edwards, M. D., Chairman Necrological Committee

Delegates to American Medical Association

Joseph T. Buxton, M. D. (1922)
Southgate Leigh, M. D. (1923)
Ennion G. Williams, M. D. (1923)

PROCEEDINGS
Tuesday, October 31
8 P. M.
Shriners' Temple
Open to Public and Profession

Call to order—R. Lloyd Williams, M. D., Chairman Local Committee of Arrangements
Invocation..... Rev. Sparks Melton, D. D.
Address of Welcome in Behalf of the City
Mayor Albert L. Roper
Address of Welcome from Norfolk County Medical Society—Julian M. Rawls, M. D., President, Norfolk Co. Med. Society.
Response in Behalf of the Society—
John Staige Davis, M. D. University
Announcements
Address of President—E. C. S. Taliaferro, M. D., Norfolk.
Memorial Hour
Report of Executive Council
Reports of Committees and Delegates
Report of Secretary-Treasurer
Tuberculosis Among the Negroes—H. R. M. Landis, M. D., (invited guest), Philadelphia, Pa.
Tuberculosis in Rural Virginia—H. R. Edwards, M. D., Clinician to Bureau of T. B. Education, State Board of Health, Richmond

---

Wednesday, November 1
9 A. M.

Meeting of House of Delegates. (Place to be announced.)

County or Component Societies are urged to send to this meeting their quota of delegates. Each Society is entitled to one delegate for each thirty-five members or major fraction thereof, provided that each Society shall be entitled to at least one delegate.

---

10 A. M. to 1:30 P. M.

General Meeting (Shriners' Temple)

Report of Clinical Cases (Five minutes for each report).

Subject For Discussion

NUTRITIONAL (DEFICIENCY) DISEASES

(a) Presentation of the General Subject—Surgeon Joseph Goldberger, U. S. P. H. S., Washington, D. C.
(b) Pediatric Aspects—Lawrence T. Royster, M. D., Norfolk
(c) Orthopedic Aspects—Thomas Wheeldon, M. D., Richmond
(d) Neurologic Aspects—Frank H. Redwood, M. D., Norfolk
(e) Cutaneous Aspects—Thomas W. Murrell, M. D., Richmond

Discussion
Is Progress Being Made in the Surgical Treatment of Acute Abdominal Conditions?—Murat Willis, M. D., Richmond
Discussion
Certain Aspects of Medical Education
Theodore Hough, Ph.D., University
Public Health Work and the Layman
Roy K. Flannagan, M. D., Richmond
Changes in a Small Town Brought About by the Health Department—B. B. Bagby, M. D., West Point
Observations on Diphtheria in Virginia—Aubrey H. Straus, B. S., Richmond

---

Wednesday Afternoon—3 P. M.
General Meeting (Shriners' Temple)

Focal Infection as a Cause of Disease—Charles H. Mayo, M. D. (invited guest), Rochester, Minn.
The Modern Conception of the Diagnosis and Treatment of Gastric and Duodenal Ulcer, Frank Smithies, M. D. (invited guest), Chicago, Ill.

Adjournment to Medical and Surgical Sections
Medical Section (Shriners' Temple)

Brain Tumor Localization—A. A. Burke, M. D., Norfolk
The Diagnosis of Brain Tumor—Beverley R. Tucker, M. D., Richmond
The Importance of Otology and Ophthalmology in the Diagnosis of Brain Tumor—John Dunn, M. D., Richmond
Visual Disturbances in Brain Tumor—Emory Hill, M. D., Richmond
X-Ray Examination in Cases of Brain Tumor—Daniel D. Talley, M. D., Richmond
Some Points in the Surgery of Brain Tumor—C. C. Coleman, M. D., Richmond
The Forces Which Prevent Modern Medicine From Being a Success—A. A. Houser, M. D., Richmond

Surgical Section (Southland Hotel)

Oxygen Supply and Demand in General Anesthesia—R. C. Whitehead, M. D., Norfolk
Regional Anestheisa, Southgate Leigh, M. D., and J. H. Culpepper, M. D., Norfolk
Stones of Salivary Glands and Ducts—Guy R. Harrison, D. D. S., Richmond
A Study of the Lumbar Index, with Special Reference to the Significance of Diminished Lumbar Curve—Stuart Michaux, M. D., Richmond
Spondylitis Deformas (Marie-Strumpfel Type)—Allen F. Voshell, M. D., University
Report of a Case of Pulmonary Abscess Cured by Artificial Pneumothorax—C. L. Harrell, M. D. Norfolk

---

Wednesday Evening—8 P. M.
Medical Section (Shriners' Temple)

Where Shall We Find Our Incipient Cases of Tuberculosis?—Charles R. Grandy, M. D., Norfolk
The Difficulties Encountered in the Diagnosis of Tuberculosis in Children: Report of Six Cases. (Lantern Slides).—R. C. Carnal, M. D., Rochester, N. Y.
Pneumonoconiosis: Report of Cases. (Lantern Slides). —A. L. Gray, M. D., and J. Lloyd Tabb, M. D., Richmond
Report of a Case of Dextro-Cardia. (Lantern Slides).—W. E. Killinger, M. D., Victoria

Surgical Section (Southland Hotel)

Report of a Case of Typhoid Fever With Perforation; Also Some General Observations on Typhoid Perforation—R. M. Wiley, M. D., Salem
Splenectomy in the Treatment of Splenic Anemia. (Lantern Slides).—E. J. Horgan, M. D., Washington, D. C.
Importance of Early Diagnosis of Acute Abdominal Pain—Joseph D. Rogers, M. D., Washington, D. C.
Sub-Diaphragmatic Abscess—Fred M. Hodges, M. D., Richmond

Entertainment.

Thursday, November 2
9 A. M. to 1:30 P. M.
Medical Section (Shriners' Temple)

Some Pediatric Practicalities—Sam Wilson, M. D., Lynchburg
Dry Milk in Infant Feeding—Wm. B. McIlwaine, M. D., Petersburg
Jaundice Associated with Pyuria—Littleton Davis, M. D., Roanoke
An Exanthem Occurring in Infants, With Unusual Symptomatology—Chas. E. Conrad, M. D., Harrisonburg
Child Welfare—McGuire Newton, M. D., Richmond

Balance the Ration in Severe Diabetes—Alex G. Brown, Jr., M. D., Richmond
Value of Basal Metabolism Studies in Thyroid Disease—Jas. H. Smith, M. D., Richmond
Remarks on Transduodenal Drainage of the Gall Tract—Walter B. Martin, M. D., Norfolk
Some Neglected Factors in the Treatment of Disease—Tom. A. Williams, M. D., Washington, D. C.

Surgical Section (Southland Hotel)

Delayed Union in Non-Infected Wounds Above the Umbilious—Arthur S. Brinkley, M. D., Richmond
Kidney Abscess and Pyonephrosis: Review of Cases. (Lantern Slides)—John H. Neff, M. D., University
Prostatectomy, With Special Reference to the Perineal Route—J. Shelton Horsley, M. D., Richmond
Some Further Observations on Prostatectomy—Robert C. Bryan, M. D., Richmond
The Report of a Case of Myeloma—Julian L. Rawls, M. D., Norfolk
The Early Recognition of Gall Bladder Disease—E. L. Kendig, M. D., Victoria
Occlusion of the Mesenteric Vessels—J. W. Tankersley, M. D. (fraternal delegate), Greensboro, N. C.
Mesenteric Thrombosis, With a Report of Cases—Stuart McGuire, M. D., Richmond
Painless Labor—R. L. Raiford, M. D., Sedley

Oyster Roast at Cape Henry.

Special Order—Report of House of Delegates Immediately Upon Arrival at Cape Henry

---

Thursday Evening, 8 P. M.

Medical Section (Shriners' Temple)

Intravenous Therapy in Country Practice—A. F. Wood, M. D., Parksley
The Diagnosis of Intestinal Parasitic Infection—T. Dewey Davis, M. D., Richmond
Some Reactions In Treatment of Syphilis and Probable Significance—S. G. Gill, M. D., Norfolk
Lumbar Puncture in the Routine Treatment of Syphilis—Warren T. Vaughan, M. D., Richmond
Clinical Observations on Salvarsanization Excess, With Report of Cases—J. Allison Hodges, M. D., Richmond
A Plea for a More Comprehensive View of the Correlations in the Study of Medicine—J. H. Hiden, M. D., Pungoteague
Digitalis for Intravenous Administration; An Examination of Some Commercial Preparations—Douglas Vander Hoof, M. D., and C. C. Haskell, M. D., Richmond

Surgical Section (Southland Hotel)

The Intermittence of Pyuria at the Level of the Kidney—Joseph F. Geisinger, M. D., Richmond
Granuloma Inguinale: Additional Case Reports. (Lantern Slides)—Clyde F. Ross, M. D., Richmond
Management of the Surgical Complications of Acute Gonorrhea—Dorsey G. Tyler, M. D., Richmond
Strictures of the Ureter—A. I. Dodson, M. D., Richmond
Diagnosis of Urological Conditions by the General Practitioner—Lawrence T. Price, M. D., Richmond
Roentgen Ray as an Adjuvant in Treatment of Advanced Cases of Carcinoma of the Stomach—Chas. R. Robins, M. D., Richmond
Carcinoma of Rectum and Sigmoid—Frank S. Johns, M. D., Richmond

Friday, November 3

9:30 A. M. to 1:30 P. M.

General Meeting (Shriners' Temple)

The Use of Traction in the Treatment of Fractures of the Long Bones—John E. Cannaday, M. D., (invited guest), Charleston, W. Va.
Concerning Ocular Examinations in Their Relation to General Medical and Surgical Investigations. (Lantern Slides)—G. E. de Schweinitz, M. D. (invited guest), Philadelphia, Pa.

Adjournment to Medical and Surgical Sections

Medical Section (Shriners' Temple)

Prenatal Care and Treatment—Robt. P. Kelly, M. D., Lynchburg
Electrocardiography in the Diagnosis of Cardiac Conditions—F. C. Rinker, M. D., Norfolk
Cancer—The Tribulus Terrestris of Diseases—Stephen Harnsberger, M. D., Warrenton
Auto-Anaphylaxis of the Ear—W. E. Driver, M. D., Norfolk
The Progress of Malaria Control in Virginia—L. L. Williams, Jr., P. A. Surg., U. S. P. H. S., Richmond

Surgical Section (Southland Hotel)

Report of Unusual Case of Mastoiditis—Thos. E. Hughes, M. D., Richmond
Nasal Accessory Sinuses and Optic Nerve Disturbance—J. E. Diehl, M. D., Norfolk
Obstetrics A Neglected Science and Art— Geo. T. Myers, M. D., Norfolk
Vitalizing Obstetrical Records—M. P. Rucker, M. D., Richmond
Latent Maxillary Sinusitis—J. Warren White, M. D., Norfolk
Hysterectomy and Ovarectomy for Benign Tumors and Inflammatory Disease. Report of Six Hundred Cases—G. Paul La Roque, M. D., Richmond
Result of Ovarian Grafts—S. B. Moore, M. D., Alexandria

Friday Afternoon, 3 P. M.

General Meeting (Shriners' Temple)

Unfinished and miscellaneous business.
Introduction of President-Elect.
Adjournment.

Entertainments

The Princess Anne and Country Club golf links will be open to all members of the Society.

Reception Wednesday night for members and ladies accompanying them.

Oyster Roast at Cape Henry, Thursday, for men. Will leave Shriners' Temple, headquarters of the Society, at 1 P. M.

Ample entertainment for ladies.

Papers and Discussions

The time limit in reading a paper is twenty minutes. In discussions or speaking to a motion, no speech is to exceed five minutes, and no speaker is permitted more than twice in discussing a paper or speaking to a motion.

The absence of the author when his paper is called in the regular sequence relegates such paper to the end of the program.

Papers are the property of the Society and must be handed to the Secretary just after being read.

All members, fraternal delegates, invited guests

and visitors are requested to register promptly. Registration cards may be secured at the Registrar's desk in Shriners' Temple. Any member who has not already been provided with a Society button, but lost or mislaid it, may secure another button at cost.

Annual Dues

Members are requested to remit the annual dues ($4.00) to the Treasurer as promptly as possible.

Change of Address

Members will please notify the Secretary of change in post-office address.

The Southwestern Virginia Medical Society

Held its regular semi-annual meeting at Wytheville, September 13th and 14th. This meeting was more largely attended than any previous meeting. Drs. W. B. Porter, Roanoke, R. R. Goad, Dublin, and C. H. Baker, Chilhowie, were elected to membership. The Society went on record as favoring the calling of an immediate session of the Legislature for the purpose of acting on the bond issue for good roads in Virginia.

The following officers were elected for the coming year: President, Dr. R. H. Woolling, Pulaski; vice-president, Dr. J. T. Graham, Wytheville; secretary-treasurer, Dr. E. G. Gill (re-elected), Roanoke; members of the executive committee, Drs. W. W. Chaffin, Pulaski, W. R. Whitman, Roanoke, and Z. V. Sherrill, Marion. Drs. F. H. Smith, Abingdon, and A. B. Greiner, Rural Retreat, were elected delegates to the Norfolk meeting of the State Society.

The next meeting will be held in Christiansburg, May 10 and 11, 1923.

E. G. Gill, *Secty.-Treas.*

The Nelson County Medical and Surgical Society

Held a special meeting at the New Shipman Hotel, September 21st. Dr. W. D. Meeks reported an interesting case of brain tumor and Dr. W. M. Tunstall a case of thrombosis. The treatment of diphtheria was the subject for an interesting discussion. The following members were present: Drs. W. M. Tunstall, W. D. Meeks, J. C. Everett, D. C. Wills, J. B. McKee, B. F. Randolph and J. F. Thaxton.

At a former meeting, Dr. H. G. Dickie, of Massies Mill, was elected a delegate to the Norfolk meeting of the Medical Society of Virginia, and Dr. D. C. Wills, Arrington, was elected alternate.

The next meeting will be at Lovingston on the fourth Monday in November.

J. F. Thaxton, *Sec.-Treas.*

The Medical Association of the Valley of Virginia

Held its regular meeting at Clifton Forge, September 28th, under the presidency of Dr. C. E. Conrad, of Harrisonburg, Va. There were about seventy-five members in attendance and an interesting program was enjoyed. It was decided to hold the next semi-annual meeting in May at Winchester, and the following officers were elected: President, Dr. Hunter H. McGuire, Winchester; vice-president, Dr. J. M. Emmett, Clifton Forge; secretary, Dr. Alex. F. Robertson, Jr., Staunton; and treasurer, Dr. J. M. Beidler, Harrisonburg. Both of the last named officers were re-elected.

The Southside Virginia Medical Association

Met in Victoria, September 13, with a large number of its members present. A good program was rendered and discussion of the papers was freely entered into by those in attendance. Dr. W. D. Kendig, Kenbridge, was appointed delegate to represent the Association at the Norfolk meeting of the Medical Society of Virginia.

At the close of the program the Association was entertained at a banquet given on the lawn of Kendig Bros. Hospital, by Drs. W. D. and E. L. Kendig.

The next meeting will be held in South Hill the second Tuesday in December.

R. L. Raiford, *Secty.*

The Buckingham County Medical Society,

At its meeting on September 20th, elected Dr. Perkins Glover, Arvonia, president, and Dr. John Randolph, Arvonia, secretary. Delegate elected to the State Society meeting in Norfolk is Dr. Perkins Glover, Arvonia, and alternate, Dr. J. Randolph, Arvonia.

The Bedford County Medical Society,

At a recent meeting appointed Dr. R. H. Bennett, of Huddleston, Va., as delegate from that Society to the Norfolk meeting of the Medical Society of Virginia.

W. O. McCabe, *Sec'y.*

The Arlington County Medical Society,

At its regular meeting held September 20, 1922, elected Dr. W. C. Welburn, Ballston, delegate, and Dr. R. N. Sutton, Clarendon, alternate, to the Medical Society of Virginia to be held at Norfolk, October 31-November 3, 1922.

B. H. Swain, *Sec'y.-Treas.*

The Lynchburg and Campbell County Medical Society,

At a recent meeting, elected Drs. Robt. P. Kelly and John W. Dillard, both of Lynchburg, delegates to the Norfolk meeting of the State Society, and Drs. F. O. Plunkett and Norman W. File, also of lynchburg, alternates.

The Lunenburg County Medical Society,

At a meeting held at Victoria, October 2, unanimously elected Dr. E. L. Kendig, of Victoria, to represent the Society in the House of Delegates at the Norfolk meeting of the Medical Society of Virginia.

The Southampton County Medical Society

Has appointed Dr. R. H. Cobb, Franklin, as delegate to the annual meeting of the Medical Society of Virginia in Norfolk, the last of this month. He is to select his own alternate, in case it is impossible for him to attend.

Correspondence

Justice for the Doctor.

Lynchburg, Va., September 22, 1922.

To the Editor:—

I am sending you a piece which came out in my home paper to-day, which speaks for itself. I will say that I have had a real fight and one in which I do not feel that I fought for myself only, but that it is the cause of every man practicing to-day. I want especially to call your attention to the fact of the Judge setting aside the one cent verdict. In doing so, I feel that he has done much to keep this kind of case out of court.

W. Harman Evans, M. D.

The following which is the piece to which Dr. Evans referred, was taken from *The Lynchburg News*, of September 22, and was printed under the caption, "Dr. Evans Wins $10,000 Suit."

"Judge William R. Barksdale, in circuit court here yesterday, entered judgment for the defendant in the case of Mrs. Holley L. Tweedy against Dr. W. Harman Evans in which a jury at the July term of that court returned a verdict of one cent for the plaintiff. The case now goes from the docket after three trials. The suit was brought several years ago for $10,000 damages for alleged malpractice.

"The first two trials of the case resulted in hung juries, but at the last trial two months ago there was a verdict of one cent for the plaintiff. A motion was made at that time that Judge Barksdale set the verdict aside and yesterday morning he gave judgment for Dr. Evans, thereby putting the court costs of the suit and cost of the three trials on the plaintiff."

Secretary's Announcement

Norfolk Meeting of the State Society Will be a Great Success.

Every member of the Medical Society of Virginia who can get away from his work for a few days should attend the meeting of the organization in Norfolk, October 31st-November 3rd. A program of unusual excellence has been arranged, distinguished leaders in the profession from other states will be there as our guests, and our members in Norfolk and Portsmouth are determined that visitors shall have the best time that hospitable city has ever given any guests. Members living in Northern Virginia will find the boat trip from Washington to Norfolk unusually attractive. Beautifully equipped steamers leave Washington every evening about six o'clock, arriving at Norfolk the following morning at seven.

Secure your hotel accommodations in advance through Dr. R. L. Williams, Chairman of the Local Committee on Arrangements, 405 Taylor Bldg., Norfolk. Carry as many members of your family as possible because the wives of our members in Norfolk are planning to entertain the wives and daughters of visiting physicians.

Reduced round trip fares to the Norfolk meeting have been arranged for through the Southeastern Passenger Association. You may secure from the office of the Medical Society of Virginia, 104½ W. Grace St., Richmond, a certificate indicating that you are entitled to the reduction. You will give this certificate to the agent when purchasing your ticket and secure a reduction of one-fourth on the total cost of the round trip. Ad-

ditional certificates should be requested for members of your family attending the meeting with you. How many certificates do you want? A stamped addressed envelope will enable the office to forward your certificate immediately on receipt of your request.

Have you paid your assessment for 1922? It costs about nine dollars per year per member to finance the society, of which amount members pay only four dollars. If you have not already done so—send your check in today for four dollars. We can beat the world's record for collections if every member will do this.

G. H. Winfrey, *Secretary-Treasurer.*

The Truth About Medicine

In addition to the articles enumerated in our letter of August 1st, the following articles were accepted during July:

Intra Products Company:
Ven Calcium Cacodylate Ampules-Ipco.

Winthrop Chemical Company:
Theocin.

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

G. W. Carnrick Co.:
Corpus Luteum—G. W. C. Co.

Gradwohl Laboratories:
Sterile Solution of Mercury Oxycyanide—Gradwohl.

Lederle Antitoxin Laboratories:
Pollen Antigens—Lederle,
Solution Epinephrine—Lederle.

New York Intravenous Laboratory:
Loeser's Intravenous Solution of Mercury Oxycyanide.

Parke, Davis and Co.:
Antipneumococcic Serum (Polyvalent).

Winthrop Chemical Co.:
Luminal Sodium Tablets 1½ grains.

In addition to the articles enumerated in our letter of September 1st, 1922, the following articles were accepted during August:

H. K. Mulford Company:
Mercurialized Serum No. 2—Mulford,
Mercuric Succinimide Hypodermic Tablets No. 5.

Parke, Davis and Company:
Adrenalin and Cocaine Tablets Rx B
Adrenalin Tablets No. 2,
Brometone Capsules, 5 grains
Tuberculin (old) and Control for the Von Pirquet Test,
Tuberculin Ointment for the Moro Test.

During September the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

H. A. Metz Laboratories:
Novocain and L-Suprarenin Tablets "H",
Novocain Solution, 1 per cent.
Novocain Base,
Novocain Nitrate,
Pyramidon Tablets.

United States Radium Corporation:
Ampules Radium Chloride 2 Cc-U. S. Radium Corp. (Radium element, 5 micrograms),
Ampules Radium Chloride 2 Cc-U. S. Radium Corp. (Radium Element 10 micrograms),
Ampules Radium Chloride 2 Cc-U. S. Radium Corp. (Radium Element, 25 micrograms).

Winthrop Chemical Company:
Fereo-Sajodin.

Book Announcements

The Place of Version in Obstetrics. By IRVING W. POTTER, M. D., F. A. C. S., Buffalo, New York. Obstetrician-in-Chief, Deaconess Hospital and St. Mary's Maternity Hospital, etc., St. Louis. C. V. Mosby Company. 1922. 8vo. 138 pages with 42 illustrations. Cloth. Price, $5.00.

A Preface outlines the reason for the author's adoption of his method as an almost routine measure; and a foreword gives the purpose of the monograph under review. Excellent chapters of more than uncommon interest deal with the early history of the maneuver and its development in the nineteenth century. Following these is the author's technic, so elaborately illustrated with cleanest-cut half-tones that the various steps are intelligently followed without the least effort. Chapters on *Criticisms and Answers* and on *Indications and Advantages of Version* are succeeded by a *Conclusion* in which the author gives his statistics, and the contra-indications and indications in summary; and in which he says that his fetal mortality is certainly no greater than that occurring in the ordinary manner of effecting delivery, and that the newly born infant is never roughly handled in order to induce respiration, this last being emphasized. Moreover, he remarks that it has been demonstrated that any capable and properly-trained man can carry out the maneuver without difficulty; and that he believes that the shortening of the second stage of labor will do more than any other single influence to lessen the fear of childbirth now so universal among mothers, and will result in a higher birth-rate in that class of society upon which the well-being and continuance of our state rests.

While there is no reason to doubt the figures cited, it is questionable whether the routine practice of version by men who do not command a large number of patients can produce as favorable results unless conditions under which obstetrics is taught and practiced be materially changed, experience, as empha-

sized by the author, being very necessary to acquire the necessary skill.

The book is beautifully printed and bound, though one wishes for a paper not so highly sized and calendered, used in this case, of course, for bringing out the half-tone illustrations.

Minor criticisms of punctuation and errors in spelling might be indulged in, but remembering the spite of the linotype man when setting up a recent criticism, the reviewer hesitates, and concludes with pointing out the now common errors of confounding "temperature" with "fever" and "case" with "patient."

M. W. P.

Radium Therapy By FRANK EDWARD SIMPSON A. B., M. D., Professor of Dermatology, Chicago Policlinic; Adjunct Clinical Professor of Dermatology, Northwestern University Medical School; Director Frank Edward Simpson Radium Institute, etc., St. Louis. C. V. Mosby Company, 1922. 8vo. 391 pages with 166 original engravings. Cloth. Price $7.00

It would not be difficult to wax enthusiastic in a review of this work. The difficulty lies in refraining from doing so.

From the table of contents to the index, which make a good cross-reference, the work is of utmost interest and value whether the reader be a beginner in the study of medicine, a general practitioner or a specialist. To the man with a bent toward physics, the early chapters give a most satisfactory insight into the philosophy of radio-activity; and these chapters form an introduction, so to speak, to their application, first, in experimental work, and, second, in practical medicine and surgery.

Very little is left to the imagination, the author being very explicit, frequently illuminating his text with diagrams and with photographs from actualities, and using language so simple as to be incapable of misconstruction.

It is a temptation to review the book chapter by chapter, but the author is so succinct that his text cannot be reduced without marring it. We may, however, quote a paragraph that would seem to differentiate the action of X-rays and radium-rays in one respect, at least:

"From the clinical side, many observers, including the writer, have not been able to convince themselves of an actual stimulation of tumor growth by radium-rays. One may doubt if such stimulation occurs under the modern method of very large primary doses. If it could be shown conclusively to occur it would constitute one of the many limitations of radium treatment to be guarded against as far as possible by powerful radiations directed especially toward the periphery of tumors. One should not forget, however, that very massive treatments with heavily screened radium may even defeat their own object by causing such extensive injury to normal tissues as to result in serious harm to the patient.

This fact tends to limit the usefulness of radium in the treatment of very extensive and deeply situated cancerous masses."

In the last two sentences we see an analogy to the action of the X-rays.

A most thorough bibliography, in which we note two papers that appeared in the VIRGINIA MEDICAL MONTHLY, completes the book.

M. W. P.

Transactions of the American Pediatric Society. Thirty-fourth session. Held at the Wardman Park Hotel, Washington, D. C., May 1, 2 and 3, 1922. Edited by HENRY L. K. SHAW, M. D. Volume XXXIV.

Transactions of the College of Physicians of Philadelphia. Third Series. Volume the forty-third. Philadelphia. Printed for the College. 1921. Cloth. 558 pages.

JUST BE THE BEST

If you can't be the pine on the top of the hill,
  Be a scrub in the valley—but be
The best little scrub at the side of the rill;
  Be a bush if you can't be a tree.
If you can't be a bush be a bit of the grass,
  Some highway to happier make;
If you can't be a muskie, then just be a bass—
  But the liveliest bass in the lake!
We can't all be captains, we've got to be crew,
  There's something for all of us here;
There's big work to do, and there's lesser to do,
  And the task we must do is the near.
If you can't be a highway, then just be a trail,
  If you can't be the sun, be a star.
It isn't by size that you win or you fail,
  Be the best of whatever you are.

(Hospital School Journal).

The U. S. Civil Service Commission,

Washington, D. C., announces an open competitive examination on November 8, 1922, for laboratory aid in bacteriology. If interested, apply at once to the above named Commission for form 1312, stating title of examination desired.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.
G. H. WINFREY, Business Manager and Secretary-Treasurer.
AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 OCTOBER, 1922 No. 7

Editorial

New Light on Wound Shock.

Walter B. Cannon in a recent address pointed out that former explanations of the nature of wound shock are faulty; that experiments on animals and observations made by shock-team-study of soldiers, severely wounded during the great war, go to show the error of attempting to explain the phenomena of shock upon the basis of vaso-motor control. Cannon's observations made for a point of view altogether at variance with former beliefs on this subject. This work on shock as described by Cannon was done by cooperative studies, with teams from the British, French and American forces. Committees for the study of shock, formed by the allied medical officers, fell upon many interesting and enlightening facts during the course of their investigation of this baneful phenomenon which has for many years been the subject of much speculation and investigation. It would seem in contemplating the points made by Cannon in discussing the steps of the investigation, both in the experiments on animals and in the clinical observations on wounded soldiers, that the new thought as to the cause and nature of wound shock renders the problem nearer solution than it has been heretofore. There are, as pointed out, two distinct phases or types of shock. The first phase is called primary shock and comes on almost immediately upon the infliction of the wound. This is of nervous origin and is not the object of this inquiry. But the later phase of shock, or secondary shock, which appears much later is the phase of shock under discussion. Secondary shock, then, is a serious and grave alteration in the circulation of the blood in the body that is attended by: subnormal temperature, cold, moist, pale and ashy skin, rapid thready pulse, and a marked lowering of the blood pressure. Of all the symptoms of shock the fall of blood-pressure may be taken as the most dependable and constant. Blood-pressure in wound shock uniformly falls; the systolic blood-pressure falls in direct ratio with the severity of the degree of shock. This being so, it was logical that investigation should proceed to the problem: what causes the fall of blood-pressure?

Blood-pressure, to put it in simple terms, is dependent upon three factors, (1) the heart-power, (2) the resistance in the small vessels, (3) the blood volume.

Cannon's experimental studies on animals eliminated the heart and the vaso-motor action upon the circulation as causes of the fall of blood-pressure. The steps taken in animal experimentation to show that these two factors were not influential in this are interesting and convincing but cannot be given here. As a result, blood-volume, the third possible cause of blood pressure change, remained as the factor to explain the control of the blood pressure in wound-shock. It was estimated that in severe wound shock blood volume was diminished, (1) by hemorrhage and (2) by certain definite changes in the blood elements. These changes in the blood brought about diminution of the bulk of blood in the blood vessels by the escape of the blood-fluid into the interspaces outside of the vessels. This was estimated in severe shock to be a reduction to one-seventh of the blood volume. This reduction of the oxygen-carrying elements of the blood produces deficiency of oxygen in muscles for the complete oxidation of carbohydrates into carbonic acid gas and water. This perversion of metabolism results in the condition known as acidosis. From this group of changes in the circulating blood and toxic state of the body emanate symptoms known as shock. This loss of blood volume is brought about, it seems, from the effect of unknown noxious substances generated in the tissues in

and about the wound. This was one of the most interesting points in the whole series of observations.

Cannon produced evidence to show that these noxious substances were formed in the wound tissue. He told the story of a lieutenant who was pinned beneath a large piece of timber. The timber fell across both thighs. He was in this position for fifteen hours. When discovered, his general circulatory condition was good; his mental condition was good. He directed the removal of the fallen timbers and gave instructions and orders with unusual calmness. While his legs below the timber were blue, cold and pulseless, yet he was without shock. Within a brief period after the removal of the mass from his legs, he showed symptoms of shock and died.

This, with animal experiments covering these points, seems to show that there was some substance or substances generated in wounded and lacerated tissues which, when let loose in the body, produced the lowering of the blood-pressure, a rapid pulse, a subnormal temperature, and the moist cold skin,—shock.

Internal Secretion Symposium.

Every one interested in the subject of endocrinology should read the symposium on that subject in the *Journal of the American Medical Association*, July 8, 1922. Conflicting opinions are gotten from the perusual of the papers on this subject. Together with the feeling that evident advances have been made in this domain of medicine, the reader is brought clearly to the thought that much confusion remains in the study of the internal secretions. The clinical observers appear to be surer of their ground than the laboratory group. The laboratory men, purely scientific, evidently feel that the generalizations made up to now have been based upon procedures and findings wanting in scientific accuracy and order. But, with all, the symposium is one which enables the reader of current literature to get a rather good look in upon what is running through the foremost minds in medicine today in this new field.

It would seem to be a problem for the clinician and physiologist to work out hand in hand. Certainly in a problem of internal medicine, the scientific and experimental investigations may best be conducted when the internist and physiologist conduct cooperative studies along accepted scientific lines.

Barker points out in his paper that the principal endocrine organs are: thyroid, parathyroids, thymus, lymph glands, suprarenal glands, gonads, hypophysis cerebri, epiphysis cerebri, insular glands of the pancreas, (possibly the spleen, kidneys, liver, salivary and prostate); that the specific substance produced by these glands is carried by the blood and lymph to distant parts of the body, thus acting as hormones on organs remote from the source of the secretion. He discusses the function of the endocrine organs and gives a lucid description of the certain phases of this subject, bringing the matter well before the reader for consideration from the standpoint of the physiologist.

W. B. Cannon discusses the subject in an interesting way under the caption "Some Conditions Controlling Internal Secretions." He discusses the control from the standpoint of the nervous system and humorial theory. He concludes, "if the endocrine glands are regarded as regulators of important physiologic processes, normally they are regulated by regulators. Much work must still be done, however, before we shall know the mechanisms whereby the control of their agents is exercised."

Aub discusses "The Relation of the Internal Secretions to Metabolism" and concludes that "apparently, the two glands which most influence the total metabolism are the thyroid and suprarenal"; that "the mechanism of their actions is independent"; that "the suprarenals exert acute effects while the thyroid is the more sluggish regulator of the metabolic rate."

Carlson discusses "Hypofunction and Hyperfunction of the Ductless Glands" and concludes his article with the statement that "no single phase of endocrine dysfunction is satisfactorily worked out today, clinically or experimentally." The credit for progress made and the blame for errors committed are shared by the clinical and laboratory groups.

Hoskins discusses "Some Principles of Endocrinology Applicable to Organotherapy" and he concludes that "ultimately practical organotherapy will have to be reduced to statistical bases." "This will require many more careful observations." "There is need for the founding of one or more well equipped and well financed institutions devoted specifically and in a large way to endocrine research."

Alexander Righter Craig.

The sudden death of Dr. Craig was a great shock to the profession in America. The work of the organization and operation of the American Medical Association was intimately connected with the personal service of Dr. Craig. Medical men throughout America felt that he was fulfilling faithfully the great mission with which he was charged. The vast work of conducting the varied forces of the American Medical Association was largely directed by Dr. Craig. As the years went by, the betterment of professional standards, the advances of scientific medicine, and the propagation of medical knowledge through the medium of the medical journal in America, may be said to be more and more closely related with the activities of Dr. Craig, as he performed the big duties intrusted to him in the American Medical Association.

To the State Medical Journal, one of the many activities of this Association, Dr. Craig's interest and counsel has been most helpful. His effort in behalf of a better standard for State Medical Journals in this country is a striking example of his usefulness.

His work will live on, although an untimely death has taken him away.

Norfolk Program.

Attention is called to the publication of the State Society program in this issue. The Norfolk meeting gives promise of great success. Invited guests will read papers of interest and members of the Society will prepare papers pertaining to lines in medicine, surgery and the specialties that appeal to the active practitioner.

It is hoped that every member of the Society will go to the Norfolk meeting. The papers will be instructive and the entertainment will be in keeping with the well deserved reputation which Norfolk has always enjoyed.

News Notes

The Norfolk Convention.

The days from 31st October to 3rd November are marked as red letter days on the calendar of the Norfolk County Medical Society; days when every member will be doing his best to make the visit of the State Society an occasion long to linger in memory's fond recollections.

The scientific program, elsewhere given in full, is most attractive. It will furnish a post-graduate course of more value than many for which big fees are demanded. With speakers of international renown and themes of vital interest, the meeting is sure to be of exceeding value.

Social features are always a large item in Norfolk's scheme of entertainment, and these have been given ample provision in the arrangements. The culmination will be one of the famous oyster roasts on Thursday, for which every member should stay.

The presence of the ladies is particularly desired, and special features of entertainment are being arranged for their enjoyment, to which may be added the ever fascinating occupation of shopping in Norfolk's many good stores that are just now crowded with the newest and best of the season's offerings. Bring the ladies along.

Convention headquarters will be in the Shriners' Temple, corner of Freemason Street and Monticello Avenue, just one short block east of Granby Street. Report there and register immediately on arrival, and you will be informed of all arrangements for the gathering.

Let every member of the State Society make a point of being present and getting all the educational benefit and all the fun possible out of the occasion. Cards are being mailed to each member; be sure to return the reply portion without delay to aid the committee in its plans.

LOCKBURN B. SCOTT,
Secty. Norfolk Co. Med. Soc.

M. C. Va. Alumni Association Formed.

At the recent meeting of the Fayette and Raleigh County Societies at Beckley, July 20, those present who are alumni of the Medical College of Virginia met and organized the Alumni Society of the Medical College of Virginia in Southern West Virginia. There are one hundred and twenty-one medical alumni of this institution in Southern West Virginia of whom twenty-six were present at the organization meeting. Alumni of the University College of Medicine and the Medical College of the State of North Carolina, which institutions were some years ago merged with

the Medical College of Virginia, are admitted on equal terms with graduates of the Old School. The following officers were chosen: Dr. John E. Cannady, Charleston, a graduate of the University College of Medicine, President; Dr. William R. Laird, Jr., Montgomery, a graduate of the combined schools, Vice-President; Dr. Walter E. Vest, Huntington, a graduate of the Old Medical College of Virginia, Secretary. Talks were made by several of the alumni and the following resolution was unanimously adopted:

WHEREAS, It is the tendency in modern medical education for medical schools to be affiliated with universities or other literary institutions, and;

WHEREAS, The Medical College of Virginia does not now have such an affiliation;

THEREFORE, BE IT RESOLVED that the Alumni of the Medical College of Virginia in Southern West Virginia heartily endorse the efforts of the General Alumni Association directed towards such an affiliation.

Those present pledged themselves to keep in close touch with the Medical College of Virginia and to further its interests as far as possible. During the discussion it was brought out that this was the only medical school in the South which did not close its doors during the War Between the States and thus was the supply house for the surgeons of the Confederate Army. This fact makes it the oldest medical college in the South with a continuous existence.

The next meeting of the Alumni Association will be held in Beckley, during the meeting of the State Association next May.

The Southern Medical Association

Will hold its sixteenth annual meeting in its birth city—Chattanooga, Tennessee. "The Dynamo of Dixie." November 13-16, 1922, Dr. Seale Harris, Birmingham, Alabama, presiding. This meeting will be made up of eleven sections and seven conjoint meetings.

Dr. E. D. Wise, City Health Officer of Chattanooga, will deliver the Address of Welcome, which will be responded to in behalf of the Southern Medical Association by Dr. W. S. Leathers, State Health Officer of Mississippi, Jackson, Mississippi. Dr. C. C. Bass, Dean of Tulane Medical College, New Orleans, will deliver the Oration on Medicine; Dr. Hubert A. Royster, Raleigh, North Carolina, the Oration on Surgery; and Dr. S. W. Welch, State Health Officer of Alabama, Montgomery, Alabama, the Oration on Public Health.

Of unusual interest will be the joint dinner session of the Section on Surgery and the Section on Radiology, Tuesday night. Dr. George W. Crile, Cleveland, Ohio, will represent the Section on Surgery, and Dr. George W. Holmes, Massachusetts General Hospital, Boston, The Section on Radiology. All physicians and surgeons are cordially invited to this dinner session.

Entertainments include a President's reception with dance on Tuesday night and a dance and get-together meeting on Wednesday night. On Tuesday and Wednesday elaborate entertainments have been provided for the wives of the physicians, including sight-seeing trips over the historic points of interest, luncheon at Signal Mountain Inn, theater parties, etc. The Chattanooga Committee are anxious for a large attendance of ladies. For those who golf, tournaments are being arranged on Chattanooga's wonderful golf courses.

Scientific exhibits bid fair to be of unusual interest. In the health exhibits malaria control work will be featured. In connection with the scientific exhibits there is expected to be a moving picture theater at which scientific films will be featured all during the days of the meeting.

Chattanooga excels in beautiful scenery and in points of historic interest, including Lookout Mountain, Signal Mountain, Missionary Ridge and the historic battle fields. The Hotel Committee promise comfortable accommodations for all who attend.

Special reduced railroad rates have been granted by all railroads on the certificate plan. The members of the Association will receive without applying for them a certificate entitling them to reduced rates. Any doctor who is a member of his state and county medical society, although not a member of the Southern Medical Association, who desires to attend this meeting, can have the benefit of these reduced rates by requesting a certificate from the Association office.

National Cancer Week.

Realizing that the hope to hold cancer within reasonable bounds is by continued education of the laymen with reference to symptoms and to the groundless fear of the disease and of an operation; and education of the physician to a point where he will no longer temporize but will act immediately and intelligently upon every danger signal which

might suggest cancer, the American Society for the Control of Cancer has decided to have a second "National Cancer Week." The date for this campaign is November 12-18, 1922.

All medical men and cancer committees are urged to take part in this educational work. Any information or material needed may be secured from F. J. Osborne, Executive Secretary, American Society for the Control of Cancer, 370 Seventh Avenue, New York City.

To Doctor's Wives.

Notice was given in the last issue of this Journal that a Virginia Woman's Auxiliary, composed of the wives and daughters of physicians in this State would be formed at the annual meeting of the Medical Society which will be held in Norfolk this month.

This Auxiliary will aid physicians and the allied public health officials in supporting and enforcing local sanitary measures, and, especially, county jail problems, and child welfare work; the activities of such state organizations has been endorsed by the American Medical Association, and is capable of accomplishing notable and much needed results in many sections of the state.

It is earnestly urged that as many ladies as possible accompany their husbands to the Norfolk meeting, and aid in the formation of this Auxiliary by becoming Charter Members.

Any further information will be furnished from the Society offices in Richmond, Va.

Sheppard-Towner Act Attacked by Massachusetts.

The constitutionality of the Sheppard-Towner Maternity Law was attacked early in September by the State of Massachusetts, in a petition filed in the Supreme Court of the United States, asking permission to bring an original suit against Secretary of the Treasury Mellon and others, who, under the Act, constitute the Board of Maternity and Infant Hygiene.

This constitutes the first attack before the court on the constitutionality of the measure. The motion will be considered when the court convenes in October.

Dr. L. H. Lewis,

Formerly of Elkton, Va., but who has recently moved to Cape Charles, Va., on September 22nd suffered severe injuries in an automobile accident and was taken to a Norfolk hospital for treatment. While going on a call early in the morning, Dr. Lewis lost control of his car on account of a broken steering gear, and the car swerved into a ditch and turned over, cutting the doctor in a number of places and inflicting many bruises.

Dr. A. C. Stephens

Announces his change of address from Reed Island, Va., to Barren Springs, Va.

Married.

Dr. Herman I. Pifer, Winchester, Va., and Miss Lillian Paulett Bugg, Farmville, Va., October 4. Dr. Pifer graduated from the Medical College of Virginia in 1921 and served an internship at St. Luke's Hospital, this city.

Former Virginia Doctors Visit Richmond.

Drs. W. E. Vest and R. J. Wilkinson, of Huntington, W. Va., were recent visitors in Richmond, having come here on a business trip.

Medical Annals of Roanoke, Virginia.

A small volume, tastefully bound in blue and gold, has but newly come from the press of the Stone Printing Company of Roanoke, entitled the *Medical Annals of Roanoke, Virginia.* The title page states that it was compiled by Dr. E. Pendleton Tompkins, and published by the Roanoke Academy of Medicine, in an edition limited to one hundred numbered copies.

The compiler gives a brief history of the earlier days of "The Magic City," founded in 1884, and now having grown to a city of about sixty thousand people. He mentions the names and gives a few incidents in the lives of some of the earlier medical men of that vicinity, notably Doctor (otherwise Colonel) William Fleming, a compeer of General George Washington, who lived and died in a homestead near the present city, after having made a noteworthy career as an Indian fighter. Ht traces the struggles to obtain adequate hospital facilities in the infant city. He mentions the inception, growth, and decay, of the several medical societies, predecessors of the present splendid medical organization, the Roanoke Academy of Medicine. He gives descriptions of the few catastrophies which have befallen the citizenship, in which the medical profession was concerned. Brief accounts are related of several epidemics, fortunately mostly small

ones. Condensed military records are set forth of the more than two dozen Roanoke doctors who served in the World War, also the Spanish-American War; as well as of those serving in other than strictly military capacity.

Other matters treated are the Norfolk and Western R. R. Pension and Relief Service; Red Cross activities; the various private hospitals; the Department of Public Health; the Visiting Nurses' Association; the Welfare Work of the Metropolitan Life Insurance Company; and other like topics. Considerable space is devoted to the work of the Roanoke Academy of Medicine, and interesting insight given of the scientific value, the comradeship, the frequent social features, and other notable aspects of this very live society.

Numbers of personal incidents are interspersed, as explained in the Foreword, "In the hope that what might prove otherwise prosaic might be thereby lightened."

Officers in National Guard.

Dr. Harry W. Boice has been appointed captain and surgeon, First Battalion, One Hundred and Eleventh Field Artillery, at Norfolk.

Dr. Albert V. Crosby has been appointed a captain in the medical corps, Virginia National Guard, and has been assigned to duty with the One Hundred and Tenth Ambulance Company, Norfolk.

Dr. Stephen Harnsberger,

Warrenton, Va., has been receiving treatment in a Washington hospital for an infection in one of his feet as a result of a broken blood vessel.

Good Health Week

Is to be observed throughout the United States October 23-30. It has been said that "although man prides himself on being the most intelligent of all animals, he needs the greatest guidance for his safety." Good Health Week is for the purpose of helping man to help himself. Two points which will be emphasized in this campaign are the provision of proper working conditions and the education of working men and women in the importance of personal hygiene. While we are deeply impressed by the killing of thousands in battles we don't notice the fact that hundreds of thousands of lives are hurried to end each year, by absolutely known and preventable causes. Let everybody "lend a hand" in helping others during "Good Health Week."

Dr. and Mrs. William Meyer,

Messick, Va., in August took an automobile trip to North Carolina, visiting Dr. Meyer's former home at Enfield and also visiting New Bern.

Committee to Act on Proposed Medical School.

Dr. John Wesley Long, Greensboro, President of the Medical Society of the State of North Carolina, has appointed a committee of thirty members of the Society, with Dr. I. W. Faison, Charlotte, as chairman, to take action as they may see fit on the proposed plan for a four year medical school to be established in connection with the University of North Carolina, at Chapel Hill.

Dr. L. H. Apperson,

Recently of Lynchburg, Va., announces his removal to Francisco Building, Danville, Va.

Dr. H. U. Stephenson,

Who has for a number of years made his home at Toano, Va., has been appointed medical examiner for the Virginia Industrial Commission and has assumed his new duties. He will also engage in private practice and will have offices in Professional Building, as well as with the State Industrial Commission.

Dr. C. A. Folkes

Has returned to Richmond, after doing postgraduate work in the North and has opened offices in Professional Building at Fifth and Franklin Streets. He will limit his work to diseases of the eye, ear, nose and throat.

Dr. Hunter H. McGuire,

Winchester, Va., was elected first vice-president of the American Academy of Ophthalmology and Oto-Laryngology, at its annual meeting in Minneapolis, Minn. This election carries with it the chairmanship of the section on ophthalmology, when the Academy meets next year in Washington, D. C. This association includes in its membership leading specialists in the United States.

Dr. Hunter B. Spencer,

Lynchburg, Va., was among those recently elected directors of the Lynchburg Y. M. C. A., for a term of three years.

On To Norfolk!

Time is almost here for members of the State Society to be starting for Norfolk. Be sure to be there. You are expected and a good time and an interesting program have been planned for you, your wives, and your daughters. If possible, make hotel reservations in advance, though there will be ample room even for those who find they can come at the last minute.

Send stamped addressed envelope to this office at once and secure certificate which will enable you to get from your ticket office ROUND TRIP tickets for yourself and dependent members of your family at the cost of one and a half fare each.

The program appears under PROCEEDINGS OF SOCIETIES, in this issue. The booklet program will be mailed you in a few days. You will want to hear and meet Dr. Taliaferro's invited guests—Dr. Charles H. Mayo, Dr. G. E. de Schweinitz, Dr. Frank Smithies, Dr. H. R. M. Landis, and Dr. J. E. Cannaday—names familiar to all of you.

If your Society has not elected its delegates, please do so at once.

Commercial exhibits will be up to the usual standard. Visit the booths early as possible after registering.

Registration headquarters, exhibits and general meetings will be held in the Shriner's Temple. Dr. R. Lloyd Williams, 405 Taylor Building, Norfolk, will gladly give you any special information you may wish.

Don't forget Norfolk for October 31, November 1, 2, and 3.

Infant Mortality in Birth Registration Area.

Infant mortality rates secured by the Bureau of Census for 1921 show the lowest rate for states in Oregon and the highest in Delaware. For cities of 100,000 population or more, the lowest rate was reported in Portland, Ore., and the highest in Fall River, Mass.

Dr. E. H. Lewis,

Recently of Alexandria, Va., has moved to Gordonsville, Va.

Reappointed Surgeon General of Army.

Major General Merritte W. Ireland has been reappointed by President Harding as Surgeon General of the U. S. Army.

Adenoid and Tonsil Clinic in Wytheville.

At the children's Adenoid and Tonsil Clinic held in Wytheville, Va., early in September, Dr. G. G. Rhudy, of Wytheville, performed the operations and was assisted by Drs. Chas. F. Graham, M. G. Robinson, E. M. Chitwood, and W. H. Ribble, of Wytheville, and Dr. C. R. Robinson, of Max Meadows. Twenty-eight children were operated on at this clinic.

Dr. and Mrs. M. E. Hundley,

Martinsville, Va., have returned home from a visit to Boston, Mass.

Dr. and Mrs. H. S. Daniel

Have returned to their home in Louisa, Va., after a visit to relatives in York, Pa.

Dr. Walter B. Cannon,

Professor of Physiology at Harvard University Medical School, was a recent visitor in Richmond, having been invited to address the Richmond Academy of Medicine and Surgery on September 26.

Delegates to American Child Hygiene Association.

The following doctors were among those appointed by Governor Trinkle as Virginia's delegates to the American Child Hygiene Association, scheduled to meet in Richmond, October 12, 13 and 14: Drs. B. M. Roseboro, Richmond, and Drs. Lawrence T. Royster and Burnley Lankford, Norfolk. Other members of the delegation are also much interested in physical education.

Dr. and Mrs. Hugh McGuire

Returned to their home in Alexandria, Va., about the middle of September, after spending sometime in Maine. While on their vacation, they also visited relatives in Richmond.

Dr. and Mrs. Edward Sandidge,

Of Amherst, Va., spent a vacation recently with relatives in Portsmouth, Va.

Dr. C. Mason Smith,

Fredericksburg, Va., is one of the charter members of the Aquia Duck Club, recently organized by a number of sportsmen of Fredericksburg.

Dr. Graham Stoneham

And family, of Waverly, Va., in September enjoyed a visit to Healthsville, Va.

Bequests to Hospitals.

Roper Hospital, Charleston, S. C., and the Presbyterian Hospital, Philadelphia, were made beneficiaries in the will of Mrs. Mary Jane Ross, whose will was probated in Charleston the latter part of September. To Roper Hospital will go $100,000 in cash, income from

certain property and one-half of the residue of the estate after paying other bequests, and the Presbyterian Hospital will receive $20,000 in cash and one-half of the residue.

Dr. H. H. Webb

Announces his removal from Stonega to Osaka, Va.

Dr. W. W. McChesney

Has moved from Monarat, Va., to Abingdon, Va.

Dr. Thomas G. Faulkner,

Kinston, N. C., who suffered a broken spinal vertebra about ten years ago, is now so much improved that he can walk with assistance and can again enjoy life. Dr. Faulkner was a graduate of the former University College of Medicine, Richmond, in the class of 1910.

Dr. John M. T. Finney

Has been appointed temporary surgeon-in-chief of Johns Hopkins Hospital and professor of surgery in Johns Hopkins Medical School, *vice* Dr. Wm. S. Halsted, whose death occurred in September.

Dr. Charles L. Outland,

Of the class of '17, Medical College of Virginia, recently returned from medical missionary work in Siberia, has been appointed full time county health officer of Carteret County, North Carolina. He will make his home in Beaufort, N. C.

Popular Health Move.

Dr. Powhatan S. Schenck, Health Commissioner and Director of Public Welfare of Norfolk, Va., will recommend a nine-hole municipal golf course in a local park, when the Norfolk City budget is made up in November. Next to baseball this may be considered the American national game and is a sport highly recommended for those who may not indulge in too violent exercise. This is a popular move and one which might well be taken into consideration by other city health officers.

The American Public Health Association

Will hold its fifty-first annual meeting at Cleveland, O., October 16-19, 1922. Reduced railroad fares have been arranged for members.

The Hospital Buyer,

With Dr. H. J. Achard, editor, issued its initial number in September. Business offices are at 4739 Ravenswood Avenue, Chicago. As the difference between success and failure in a hospital frequently rests with the buying executives, this publication "is dedicated to the purpose of assisting all those who influence in any way institutional purchases, through practical monthly discussions of market conditions, sources of supply and hospital business methods."

Surgeon-General Hugh S. Cumming,

Of the U. S. Public Health Service, left early this month for Europe, to spend sometime inspecting the government's sanitary stations abroad. He was to attend several medical meetings while abroad.

Dr. Warren T. Vaughan,

Richmond, will open offices for the practice of internal medicine in Suite 404 Professional Building, Richmond, on November 1st, 1922. He will continue as formerly in charge of the medical service at St. Elizabeth's Hospital, this city.

Public Health Education.

The Woman's Department of the National Civic Federation has established a Public Health Education Department and plans to carry on a public health educational campaign through the local press, trade and labor journals, and civic organizations. They have just issued a bulletin entitled "Extermination of the Mosquito." While the mosquito season is drawing to a close, Dr. Doty says "it is important to arrange early for the spring campaign as propagation begins in April," Other bulletins will follow, all of which will deal with timely health subjects.

Miss Maude Wetmore, 105 West 40th Street, New York City, is chairman of the Woman's Department of this Federation.

Dr. E. N. Wallerstein,

Of Richmond, announces the removal of his offices from 422 East Franklin Street, to 114 North Fifth Street, this city.

Expectation of Life.

Life Tables, prepared by the U. S. Department of Commerce from the 1920 Census, show a marked improvement in mortality conditions among both white and colored, in the period between 1910 and 1920 and, had it not been for the influenza epidemic in the latter part of this decade, the expectation of life would have been considerably greater. According to the tables, the longest lived people in the United States are the Kansans, the expectation of life at birth in that state be-

ing 59.73 for white males and 60.89 for white females. Washington, D. C., outranks all of the fourteen cities listed, with an average of 53.83 years as expectation of life for white males and 59.83 for white females. Among the negroes, the age limit is lower than for the whites in both males and females.

Trachoma Clinic.

In an effort to alleviate trachoma in the Near East Relief, Dr. Russel T. Uhls, former North Carolina physician, now director of the Near East Relief, Trachoma Hospital in Alexandropol, is instituting the first "swat-the-fly" campaign in the Bible lands, as his researches have made him suspect the fly of aiding to spread the disease, which for centuries has been the scourge of the Levant. For this purpose, the five sided fly-trap, so common in Army camps during the war, now graces almost every street corner in Alexandropol. Additional traps are being made and placed as fast as possible in the more important neighboring villages.

Dr. Uhls states that two out of every three children in Armenia are infected with trachoma, which is the cause of wide-spread blindness. Alexandropol has gained the unenviable reputation of being the most trachomatous city in the world. Twenty-five hundred children are treated daily for trachoma in the Near East Relief trachoma clinic.

The Virginia Society of Oto-laryngology and Ophthalmology

Will holds its third annual meeting in Norfolk, Wednesday, November the 1st. This Society was organized in Petersburg at the time of the State Society meeting there in 1920 and has grown steadily and satisfactorily, its membership comprising more than half of the best and most progressive men in these specialities in this state.

At the last meeting in Roanoke in April, there was an attendance of over sixty, and papers of much scientific value were read and discussed. Several of the most distinguished men in these specialities in the country have been its guests.

At the Norfolk meeting, Dr. J. W. Jervey, of Greenville, S. C., and Dr. Harry Pollock, of Chicago, will be its guests and deliver addresses. Proposed changes in the By-Laws, which will probably be adopted at this meeting, will make membership much more difficult to obtain.

Present officers of the Society are: Dr. William F. Mercer, Richmond, president; Dr. Elbyrne Gill, Roanoke, vice-president; and Dr. James R. Gorman, Lynchburg, secretary-treasurer. Dr. B. R. Kennon, Norfolk, is chairman of the Local Committee of Arrangements.

Wanted.

Young physician qualified to practice medicine in Virginia, who would be interested in an industrial position. Can get in touch with good proposition by addressing "Industrial," care *Virginia Medical Monthly.* (Adv.)

Wanted.

January 1st, 1923, three (3) full time young doctors for Public Health Work in a large Virginia city. Salary to begin with three thousand dollars ($3000.00) per year and expenses incident to the duties of the position. State age, place and date of graduation. Address "Health Work," care *Virginia Medical Monthly.* (Adv.)

Obituary

Dr. Gavin Rawls

Died suddenly at his home in Carrsville, Va., September 29, his death being due to heart trouble. Dr. Rawls was born in Isle of Wight County 66 years ago and received his medical education at Medical College of Virginia, Richmond, from which he graduated in 1876. He was a member of the Medical Society of Virginia; was for forty years superintendent of schools in Isle of Wight County; was at one time a member of his county board of health, and had always been an active worker in the Baptist church. He is survived by his wife, two daughters and two sons, Dr. Julian L. Rawls, of Berkley, and Dr. E. W. Rawls, of Port Norfolk, Va.

Dr. D. Oscar Clements,

Of Ordinary, Va., died September 15 and was buried at his former home at Scottsville, Va. He was fifty-seven years of age and was a graduate of the former Baltimore University School of Medicine in 1897. He was at one time a member of the Medical Society of Virginia. Dr. Clements is survived by his wife, one son, Dr. J. D. Clements, of Gloucester County, and two daughters.

Dr. George Victor Litchfield, Jr.,

Abingdon, Va., died suddenly August 29, from heart disease. He was forty-five years of age and was graduated from Johns Hopkins University Medical School, Baltimore, in 1902. Dr. Litchfield served in the medical corps of the Army during the World War with the rank of captain.

Dr. William Stewart Halsted,

For thirty-two years professor of surgery at Johns Hopkins University, Baltimore, died September 7, at the age of 70 years, about two weeks after an operation for gall-stones. He was graduated from the College of Physicians and Surgeons of Columbia University in 1877. After studying abroad, he located in New York, where he remained until he accepted the chair of surgery at Johns Hopkins in 1889. He was considered one of the foremost medical men of America, and during his career, reported many surgical discoveries of importance.

Dr. Barksdale Hales

Died suddenly at his home in Millboro, Va., the latter part of September. He was born in Halifax County, Va., in July 1858 and received his degree in medicine from the Medical College of Virginia in 1879 and from Bellevue Hospital Medical College in 1884. He was for a number of years a member of the Medical Society of Virginia, having resigned several years ago.

Dr. Edward C. Smith,

Richmond, Va., was found dead in his bed on the morning of September 16, having been in failing health for several months. He was fifty-eight years of age, and was graduated in medicine from the University of Virginia in 1881. Dr. Smith was unmarried but is survived by his mother, two sisters and a brother.

Resolutions on Death of Dr. Philip Taylor.

The following preamble and resolutions were adopted at a meeting of the Richmond Academy of Medicine and Surgery, held on the 12th of September.

On August 1st, Dr. Philip Taylor died suddenly from angina pectoris in his residence in Richmond. Born in New York City, Dr. Taylor received his preliminary education in preparatory schools in New England, and took up the study of medicine at the College of Physicians and Surgeons in New York. After graduation in 1876, Dr. Taylor spent two years in post-graduate work in England and France. Returning to this country, he located in Denver, Colorado, being the first physician to specialize in diseases of the eye, ear, nose and throat in that city. In 1882, he removed to Richmond, here, also, being among the first to practice exclusively in his chosen field. He soon secured a large practice which he retained to the time of his retirement, eleven years ago.

Dr. Taylor endeared himself to his patients by his gentleness and skill; and he was beloved by his colleagues because of his sterling worth, his winning personality, and his unswerving loyalty to his friends. Through his death, the medical profession has lost one of its ablest representatives; the community, one of its valued citizens.

Therefore, since it has pleased an omniscient Deity to remove Dr. Taylor from our midst,

Be it Resolved, By the Richmond Academy of Medicine and Surgery,

First, That we, its members, honor his memory because of his worth as a man and as a physician.

Second. That we express our sympathy to his bereaved family, and request the Secretary to transmit a copy of these resolutions to them, to spread them upon the minutes, and to publish them in the Virginia Medical Monthly, the official organ of the Medical Society of Virginia.

(Signed)

A. Murat Willis,
Jos. A. White,
W. F. Mercer,
Committee.

Resolutions on Death of Locksley P. Hening.

Whereas: God in His Infinite mercy and wisdom has seen fit to remove from our midst our class mate, the late Locksley Payne Hening, who was greatly beloved, honored, and esteemed by each of us on account of his high ideals and sterling character as a true Christian gentleman of exemplary habits, his devotion to and interest in his chosen profession, and his straightforwardness in his dealings with his fellow men, and

Whereas: By his varied talents, his enthusiastic and wholehearted efforts in and support of all things pertaining to the betterment of class and college activities he has endeared himself to us all and won for himself our admiration, respect, and love, and

Whereas: The loss of Locksley Payne Hening from our class is a source of deepest regret, his untimely death a tragic shock which all of us keenly felt, be it therefore

Resolved: That the Senior Class of the Medical College of Virginia bow in humble submission to the Power that controls our destinies, and be it further

Resolved: That we extend to his bereaved parents and loved ones our heartfelt sympathy in the loss which they have sustained, and be it further

Resolved: That a copy of these resolutions, adopted at a special meeting of the Senior Class, be sent to his parents, a copy to the Virginia Medical Monthly and a copy kept as a permanent record of the class of 1923.

Frank E. Handy,
Pres. Senior Class

Archer A. Wilson, *Chrm.*
Waverly R. Payne
J. G. Davis, Jr.
Committee.

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 8
WHOLE NO. 845

RICHMOND, VA., NOVEMBER, 1922.

20 CENTS A COPY
$2.00 A YEAR

Original Communications

RECENT VIEWS OF SOME DUCTLESS GLANDS.*

By CHARLES MINOR BLACKFORD, M. D., Staunton, Va.

Among the greatest additions to the sum of human knowledge of animal physiology which have been made within the past quarter of a century has been the determination of the functions of the ductless glands and, although there is far more yet to be learned than has already been brought to light, the facts at present known have opened a field for the treatment of conditions which have hitherto been regarded as hopeless. Idiocy, gigantism, or the over-development of the bones; acromegaly, or the over-growth of the extremities; the corresponding under-development of the body in which the patient remains short in stature, with a child-like face and small feet and hands, and with the secondary sexual characters either undeveloped or imperfectly developed, and other conditions to be described later, are now known to be due to the over-functioning or the under-functioning of certain of these little understood glands, and to be subject to treatment which will produce favorable results. So astonishing have been the results already obtained by the use of the internal secretions of these glands, or, as they are called by many students, the "incretions," that the danger of exaggerating their powers and giving them over-importance is becoming a serious one. In articles written by really learned men, and especially in articles intended for the instruction of intelligent laymen,—to say nothing of the productions of imaginative newspaper reporters,—there is a tendency to assume matters of mere speculation or conjecture to be ascertained facts, and consequently to raise hopes which will be followed by disappointment, disillusion, and possibly a loss of faith in scientific research among those whose faith and goodwill are of the utmost importance to science. It must be constantly borne in mind that the study of the incretions is very new and that very little is known of them, either from a chemical or physiological standpoint, and in advising their use therapeutically, too much must not be promised the sufferer who sees in them the only possible relief from some fearful malady.

Although many of the organs of the body have been credited with making incretions, there are but seven whose functions are at all clearly understood. These are (1) the thyroid gland, (2) the parathyroid glands, (3) the pituitary gland or hypophysis cerebri, (4) the pineal gland or epiphysis cerebri, (5) the suprarenal glands, (6) what are called the islands of Langerhans of the pancreas, and (7) the interstitial tissue of the gonads (the ovaries and testes) which constitute what is called the "puberty gland." There is evidence that each of these bodies produces an internal secretion which, distributed through the blood, exerts important chemical effects on more or less distant organs and tissues, and that without this internal secretion, these organs or tissues would either cease to functionate or would functionate improperly. The chemical materials contained in these internal secretions, or incretions, have been called "hormones," and they appear to stimulate the cells of the various organs to action much as the hormones of the spermatozoa stimulate the ova to development. The chemical composition of some of these hormones may be closely approached, even if not definitely determined, as is shown by the researches on epinephrin, a product of the medullary portion of the suprarenal gland, and on iodothyrin and thyroxin, materials obtained from the thyroid gland. At present physiological chemistry can hardly be said to be in its infancy; it is barely in its embryonic stage. Living tissue cannot be analyzed without killing it, and between living tissue and dead tissue lies a vast gulf whose precise nature we do not know. When we make an extract from a living or-

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

gan and then pull it to pieces by our analytical methods, we do not know what artifacts we are producing, but we may be certain that the products are quite different from the products of the sound, living organ. At present when we try to use hormones therapeutically, we do so by administering the gland from which the desired agent comes, or an extract from it; but this is as crude as it would be to administer cinchona bark in a case of malaria instead of giving the active agent, quinine. We are certainly giving quantities of inert materials and possibly injurious agents, in the crude gland, and before glandular therapy can become truly scientific, organic chemistry must advance to the point at which the pure hormones may be isolated.

The principal methods by which the functions of the ductless glands may be determined in the human subjects are (1) to observe the clinical syndromes and then, by post-mortem examination, to ascertain whether certain syndromes are invariably associated with morbid conditions of certain glands, and (2) to ascertain what effects are produced in certain morbid states by the administration of certain glands or extracts from them. Experiments have been tried on the lower animals by transplanting glands; by surgical extraction of glands and by injections of concentrated extracts of the glands, or, when possible, of single hormones, and noting the results. Time and space will not permit reference to more than a few of these results, but I hope that these may be good illustrations of what is being discovered.

The first of the ductless glands to attract attention was the thyroid, and it is probably the best known member of the group. In 1859 Shiff, of Geneva, found that the removal of the thyroid gland from a dog caused violent nervous disorders and death, and in 1882, the brothers, J. L. and A. Reverdin, showed that in certain goitrous subjects and after the removal of the thyroid in some cases of goitre in which such symptoms had not been manifested up to the time of the removal, trophic and nervous disturbances developed. It is obvious that these symptoms follow a lack of some substance normally elaborated by the thyroid, and in 1877 Ord applied the name "Myxoedema" to the disease produced by thyroid insufficiency. In 1880, soon after Ord had determined that myxoedema sprang from a deficiency in the function of the thyroid, Sandstrom, a Swedish physician, discovered two small bodies external to the thyroid, and in 1893, Nicolas, of Nancy, discovered two glandules internal to the thyroid, and these four bodies have been called the parathyroid glands. As the thyroid and the parathyroids are connected with the same blood vessels, it is apparent that physiologically this group of glands must be considered together. Recent writers have given some carefully detailed accounts of the differing clinical results following the removal of the thyroid without removing the parathyroids and of removal of the parathyroid while leaving the thyroid intact,* but as affections of the one commonly involve the other, from the standpoint of the physician they may be regarded as one organ, and will be so regarded in this paper.

In typical cases of exophthalmic goitre, known also as Graves' disease or Basedow's disease, there will be found an enlarged, pulsating thyroid gland; a pulse rate of 150 or more to the minute instead of the normal rate of about 72; a protrusion of the eyeballs, from which the name "exophthalmic" is derived; a tendency to profuse sweats and watery diarrhoea; and great sensitiveness to heat. In addition to these symptoms the patient is apt to have an over-alertness of mind and abnormal timidity, and there is a tendency to emaciation, notwithstanding an abundant food supply. If a normal subject be fed with thyroid extract, a similar syndrome will be developed, and it is therefore believed that in exophthalmic goitre there is over-functioning on the part of the thyroid gland.

In myxoedema, or Gull's disease, a condition is found which is diametrically opposed to that in Graves' disease. The thyroid gland is small; the pulse rate is usually slow; the eyes look sunken with a narrowing of the lid-slits; the bodily movements are slow and awkward; and mentally the patient is dull, forgetful and apathetic. There is increased sensitiveness to cold and a tendency to constipation; the hairs tend to fall out; the skin becomes dry and wrinkled, and the patient is disposed to obesity in spite of a restricted diet. As this condition follows the removal or degeneracy of the thyroid gland and as such patients improve rapidly when fed the thyroid of sheep,

*See "The Internal Secretions and the Principles of Medicine," by Chas E. de M. Sajous, M. D., etc. Tenth Revised Edition, Vol. 1, page 144 et seq.

it is believed that myxoedema is due to under-activity or under-functioning of the thyroid gland.

Two contrasting syndromes are produced by over-activity and under-activity of the pituitary gland. Sajous† seems to regard the pituitary body as a general center for the nervous system and to look on its relations to the nervous system as far more important than its functions as a gland. Without venturing to speak as one having authority on this subject, I think it is well to bring forward the two contrasting syndromes which, from the best of our present knowledge, are due respectively to over-function and under-function of this organ.

If there be over-function of the pituitary gland in early life, before the epiphyses of the long bones have united with the shafts of those bones, there is over-stimulation of bony growth and the subject becomes excessively tall, a condition known as gigantism. Should the pituitary gland over-function later in life —that is, after the epiphyses have united with the shafts of the long bones,—there will be a bony overgrowth, but it will be seen in an increased size of parts of the skull and of the hands and feet, a condition known as acromegaly. The tongue and internal organs are enlarged, and the facial appearance of the patient is characteristic. The face is almost hexagonal; the nose is broad and the chin is prominent and apt to be curved upward; the cheek bones stand out and the arches above the eyes are prominent. The facial profile is like that of "Punch;" it is what is called the "nut-cracker" face, with the nose and chin approaching one another. The hands are flat and broad; the fingers are large and blunt; and the feet are abnormally large.

Should there be under-functioning of the pituitary gland during development, a condition results which is known as Froehlich's syndrome. When this results, the skeletal development is deficient. The patient is short in stature, the face remains child-like and the feet and hands are small; a state markedly contrasting with acromegaly and known as acromikria. The skeleton is apt to be defective, the growth of bone being sub-normal. The sub-cutaneous fat is greatly increased, but it is unevenly distributed over the body, being mostly over the abdomen, over the buttocks and at the upper portions of the extremities. The secondary sexual characters are poorly developed. The pubic hairs are absent or are scanty; the external genitalia remain in an infantile state, and in young men the voice is high pitched and normal virility is absent, while in young women the menstrual flow is scanty or totally missing.*

With such contrasting pictures of the results of over-activity and under-activity of the pituitary gland, it is difficult to see how this body can be regarded as other than an endocrine organ, and although it is a factor in the nervous system, it has other and possibly more important functions than being merely a central station for the nerves passing from the brain cortex to the periphery.

I wish to cite one more illustration of the effects following disordered conditions of ductless glands and this is the contrasting syndromes believed to be produced by the over-activity and under-activity of the suprarenal capsules. It is unnecessary to detail the histology of the adrenal glands, as it is doubtless well known to all of my auditors, and it will suffice to say that even to the naked eye, these bodies show two sharply differentiated parts:—an inner part, known as the medulla, and an outer part, known as the cortex, which is, in turn, covered by a connective tissue capsule, from which at intervals partitions are given off and extend through the gland tissue, growing progressively thinner until they become hardly perceptible. The cortex is of a yellowish tint, due to the fat granules which characterize its epithelium cells, and the medulla is of a reddish, vascular appearance. A solution of potassium bichromate stains brown a substance which the medullary cells contain, and cells containing this substance are found widely distributed throughout the body, especially in the sympathetic nervous system and its ganglia, the carotid glands and the posterior lobe of the pituitary gland. Wherever found, these cells are alike, and they constitute what has been termed the "chromaffine system," of which the adrenals are the main portions.

In the first edition of his work on "Internal Secretions and the Principles of Medicine,"

†See "The Internal Secretions and the Principles of Medicine," by Chas. E. de M. Sajous, M. D., etc. Tenth Revised Edition. Vol. I, Page 483 et seq.

*Lewellys F. Barker, M. D. Presidental Address at the Tenth Annual Meeting of the Eugenics Research Association, held at Cold Spring Harbor, Long Island, June 10, 1922. Published in Science for June 30, 1922.

published in 1903, Dr. Sajous advanced the view that the adrenal glands, or rather the chromaffine system, furnished a material which absorbed oxygen in the alveoli of the lungs, then became a part of the oxyhaemoglobin of the blood and was carried by the blood current throughout the body, acting as an oxidizing agent wherever it was carried. Since that time many physiologists have adopted this view, and it may be said that it is now the general belief that the adrenal bodies play a very important part in respiration. The taking up of oxygen by the haemoglobin had long been a physical mystery. It had been shown that practically all of the oxygen in the alveoli was absorbed by the haemoglobin and that the amount so absorbed did not depend on pressure nor did the interchange of oxygen and carbon dioxide follow the ordinary laws of the diffusion of gases. It was obvious that some intermediary agent was necessary, and for a while it was thought that the oxygen absorbing and carbon dioxide excreting function was performed by the lining membrane of the air cells. This theory has gradually fallen into disfavor with further research, and it is now generally accepted that this interchange is due to a secretion of the adrenal glands. In the last, the tenth, edition of Dr. Sajous' work (Vol. I, page 60 et seq.) a full history of the experimental proofs on which the new belief rests is given, and it is needless to repeat it here.

The chief clinical pictures believed to depend on disorders of the suprarenals are presented by the syndrome of under-activity, usually known as Addison's disease, and a corresponding syndrome which is thought to be produced by over-activity of these organs. In Addison's disease there is great weakness and prostration; the blood pressure is low; diarrhoea and other digestive disturbances are common; there is a chronic anaemia and often a peculiar bronzing of the skin which is almost diagnostic. This symptom has been given too much prominence, however, and the dictum "No bronzing, no Addison's disease," has no doubt proven unfortunate for the patient in many cases, for many instances of advanced lesion of the adrenals, as shown by post-mortem examinations, have shown no bronzing of the skin.

On the other hand over-activity of the suprarenals presents a peculiar clinical picture, though one which differs according to the time at which the over-activity begins. When the onset occurs during foetal life, pseudohermaphrodism is apt to occur; the child presenting the external genital appearances of one sex associated with the internal organs of the other. Should the presumed over-activity set in soon after birth instead of during embryonic life, puberty is apt to come on prematurely; a little girl of three or four years having been known to menstruate regularly and to show the mental and bodily sexual attributes of an adolescent, while a boy of seven may present the external genitals and other sexual characters of an adult. Should the over-activity of the suprarenals not develop until middle life, it will show itself by the rapid development of hairiness all over the body (hirsutism) and by the exhibition of marked masculine characteristics (virilism).*

Important as the functions of the adrenals may be as shown in these syndromes, it is the growing belief that the more essential function of these glands is the secretion of the oxidizing agent referred to above and known as adrenoxidase. By this term is meant a body, originating in the adrenals, which enables the blood to take up oxygen from the pulmonary alveoli and later to enable oxyhaemoglobin to exert its oxidizing power.† According to Bohm, Davidoff and Huber, in their "Text-Book of Histology," as quoted by Sajous, the capillary network of bloodvessels in the alveoli is "extremely fine" and is "sunken into the epithelium." In these capillaries the red corpuscles containing haematin meet the adrenal secretion, and as both the haematin and the adrenal secretion are reducing agents, they take up oxygen. The adrenal body has far the greater affinity for oxygen, however, and it therefore takes it through the delicate alveolar membrane and passes on to the haematin of the red blood corpuscle, which thus becomes laden with oxyhaemoglobin. The true oxidizing principle of oxyhaemoglobin is the adrenal secretion which has combined with oxygen and is known as adrenoxidase.

A number of modern writers ascribe to adrenoxidase the activity of many of the physiological ferments. To it is given credit for the action of trypsin, which is thought to

*Lewellys F. Barker, M. D. Presidential Address at the Tenth Annual Meeting of the Eugenics Research Association, held at Cold Spring Harbor, Long Island, June 10, 1922. Published in Science for June 30, 1922.

†Sajous, Chas. E. de M., M. D., etc. The Internal Secretions and the Principles of Medicine. Tenth Revised Edition, 1922. Vol. II, pp. 849-850.

be produced by the union of a substance known as trypsinogen with oxygen; the oxygen being supplied by adrenoxidase. Similarly, pepsin, ptyalin, rennin and practically all of the body ferments are thought to be the result of the union of oxygen with some mother-substance, and in each case the union is effected by means of adrenoxidase. Besides being what Sajous calls "the ferment of ferments," and putting into activity the various ferments which are essential to life, adrenoxidase is thought to be the great defensive agent against toxic substances in the blood. When there be need for such activity, the adrenals are stimulated to greater production of their secretion by the sympathetic nervous system, which in turn is dominated by the posterior lobe of the pituitary body.* This lobe Sajous calls the "test organ," deeming it the equivalent of an organ found in many of the invertebrates and some of the lowest vertebrates, whose function it is to test the water about to pass over the respiratory organs and to prevent the inhalation of noxious matters. In like manner Sajous claims that noxious matters in the blood current passing over and through the posterior lobe of the pituitary gland, cause that portion of the pituitary, which he regards as the main nucleus of the sympathetic system, to stir the adrenals to increased activity and to the production of a larger quantity of adrenoxidase to combat the toxines so detected. He thus suggests that the pituitary gland is the governing center of the body's immunizing functions, since by its detection of the various toxines which are the immediate causes of diseases, the adrenals are stirred to increased activity and a greater quantity of the oxidizing ferment is thrown into the blood current to destroy them. The rise in temperature—the fever, in other words, which attends most of the infectious diseases, is explained as the result of this increased oxidation.

Sajous ascribes many affections which have hitherto been of unknown origin, to toxines or poisons formed in the body and not destroyed because the adrenal glands fail to produce their oxidizing agent in sufficient quantities. Among these diseases is epilepsy, and he states as his own conclusion, that the main difference between the convulsions of epilepsy and those produced by the action of strychnia, or other exogenous poisons, is that the epileptic convulsions are due to poisons formed in the body and not destroyed as they should be. He further says that the main predisposing cause of idiopathic epilepsy is the tendency of many diseases, such as typhoid fever, influenza, and many of the diseases of childhood, to inhibit the function of the pituitary gland as the stimulating organ for the adrenals. He also makes the claim that syphilis, alcoholism, tuberculosis or any hereditary taint which tends to produce a general debility in the offspring, may impair the test organ's sensibility and so tend to produce epilepsy.†

The functions of the ductless glands cannot but lightly be touched upon in a single paper, and this one has reached its utmost limits. As yet, the subject has not been sufficiently explored for us to grasp its full import, but from what has been ascertained, it is apparent that the world is on the eve of some discoveries which will affect the welfare of the human race as have few products of the human intelligence. There is reason to believe that certain of the hormones influence heredity by their effects on the reproductive cells and that what used to be called the "constitution" of an organization is really the effect produced on the fertilized ovum by these hormones or other agents. Vertebrates have followed an hereditary habit of developing two eyes, one on each side of the middle line, and this habit has been followed since Devonian time, but if fertilized fish ova be allowed to develop in sea water containing an excess of magnesium chloride, this hereditary habit of long standing will succumb to environment, and monsters will be produced with a single cyclopean eye on the frontal bone. We know that the development of tadpoles into frogs may be greatly accelerated by the feeding of thyroid substance and that it may be greatly retarded by the feeding of thymus substance. We know that certain of the incretions markedly affect the dimensions and proportions of the skeleton and of the soft parts, and that certain of them greatly affect the development of the mental powers and the general vigor of the individual. With this much already ascertained, we may guess at the vast possibilities which may lie before us if we can determine the precise parts taken

*Sajous, Chas. E. de M., M. D., etc. Work cited above, Vol. II, Page 960.

†Sajous, Chas. E. de M., M. D., etc. Work cited above, Vol. II, page 1457 et seq.

by the ductless glands in heredity, and by correcting the effects of an over-supply or of an under-supply of certain incretions which cause improper development of members of the human race, we may eliminate mental, moral and physical degenerates and produce a race which will far surpass all which have preceded it.

Discussion.

Dr. Kenneth Bradford, Staunton: Dr. Blackford has, I think, performed a real service. His paper has told me, and possibly others, how vastly important this subject is, and how very little we know about it up to date. I think he brought out one important fact, that the secretions of these ductless glands have a tremendously important bearing on the cause and treatment of every-day conditions that we come into contact with. Everything seems to hinge on the question of hypo- or hyper-secretion, and that, of course, has a direct bearing on body metabolism which can now be measured at once by the metabolic rate. Therefore, it is as important to find out the metabolic rate in a given case, and hypo- or hyper-secretion, as to find out whether there is too much or too little hydrochloric, or the blood pressure, or anything else bearing on it. This deals directly with the nutrition of the body. We come into contact with cases of this kind every day. We also deal with metabolism probably more than anything else in body-building, and, since we have accurate means of determining whether there is hypo- or hyper-secretion, it is our duty to make the effort to determine that fact.

PNEUMONIA IN INFANCY.*

By G. S. HARTLEY, M. D., Clifton Forge, Va.

Pneumonia in infancy and childhood is second as to causation of the high mortality in treating children, the various forms of diarrhoeal infections being considered first. A great deal is being done now to prevent the high mortality rate in severe diarrhoeal conditions, but it rests almost solely on the individual physician as a whole, as regards the number of inflammatory conditions of the lungs in childhood, as we are prone not to consider pneumonias as complications of the various infectious diseases and catarrhal conditions of the respiratory tract. I believe we can by more careful examination, energetic treatment of the condition present, and prophylaxis, prevent a great many more cases of pneumonia than we do.

In presenting a paper on this subject I have very little new to offer on any of the various phases of these conditions.

Etiology.

The etiology of the various types of pneumonia is that any pathological microorganism, especially the pneumococcus, chooses the respiratory tract as a seat of predilection for localization to produce the various forms of local or extensive inflammation where the soil has been prepared for its propagation by previous causes which favor its development, with their concurrent, systemic causes and changes.

Pathological Anatomy.

The essential difference in the pathological anatomy of the two types, croupous and broncho-pneumonia, is in the distribution of the inflammation. In the bronchial type, it begins in the branchings of the trachea following some catarrhal condition of the respiratory tract and then invades the finer bronchioles and alveoli of the lung. In the croupous type, it may begin suddenly in a small or large area of lung tissue, usually in the left lower lobe, producing consolidation by means of a coagulable exudate, the result of the inflammation with or without previous catarrhal infection.

The bronchial type is the most prevalent in infants and up to two years of age and is less evident as age advances, so much so that in adults it is not common, but returns in all its virulence and mortality in the aged. The anatomical lesions which both types produce can be explained by the difference in development. Croupous pneumonia at once attacks a large or small area in one or more lobes of the lungs and with rapidity converts it into a compact airless mass while the remainder of lung tissue may remain free of invasion. Broncho-pneumonia, by following the course of the medium and small bronchi, distributes itself by the alveoli and finally to those in relation to the bronchioles already involved in the inflammation. By extensive lobular involvement it may by coalescence resemble a croupous type but still contain air. It must be admitted, however, that there is a difference in the onset and distribution of the inflammation of the two types. The inflammatory exudate is essentially the same and you can have the same pathology of the two types involving different portions of the lungs at the same time.

Cause of Croupous Pneumonia.

The croupous type advances with a continued high temperature, rapid pulse and respiration. The local conditions of the lungs

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

remain the same, unless there is more involvement, until the crisis, which usually occurs at the end of a week, when there is usually a temporary subsidence of symptoms, again to climb back to the former level or higher in 12 to 24 hours, and then a permanent crisis. On the other hand, broncho-pneumonia shows a protracted course with a consistent but irregular variation of improvement and retrogression, the reason being that, while a portion of the consolidated lobule is undergoing involution, the inflammation is extending from a branch of the bronchial tree to other alveoli. New foci develop which cause the symptoms to again flare up; therefore, the regular course cannot occur here and the duration is indefinite. For this reason, broncho-pneumonia is much more exhausting and more fatal. These causes apply in most cases but not in all. In pneumonia in infancy, as in other diseases of childhood, there is no fast rule to be guided by without exceptions.

Symptomatology.

Croupous pneumonia, being primary, may be ushered in by vomiting, convulsions, pain in chest, rarely if ever by a chill as they are not common in children. The cheeks are fiery red, skin dry and harsh, there is increased temperature and pulse rate, with a grunting expiration, very little cough or expectoration, and no rusty sputum as this is not common in children. One of the prominent symptoms and diagnostic points is the ratio between the pulse and respiration which normally is 1 to 4, but with a respiration of 40 or 50 and a pulse of 140 to 160 the normal ratio is greatly disturbed. This sign is important in diagnosing central pneumonia. When the disease develops in the centers and spreads to the periphery in central pneumonia, physical signs are of little value. The temperature ranges between 103 and 106, pulse 120 to 170. Percussion reveals areas of consolidation with tubular breathing and increased leukocytosis from fifteen to twenty thousand or higher, and this will aid in the differentiation between pneumonia and meningitis and support the other findings. Children old enough will complain of pain in region of appendix, which is a referred pain from the pleura. Owing to the location of the pain, cases who have not been studied closely have come to operation only to find a normal appendix and a fatal termination following a marked increase in all the symptoms due to anesthesia. In broncho-pneumonia the initial symptoms are those of bronchial catarrah or bronchitis associated with increased respiration and cough which is either productive or non-productive. Dyspnoea is accompanied by cyanosis affecting face, lips and nails, if condition is extreme. As the disease progresses, the alae nasi participate in the respirations as they become more superficial and bring all the auxiliary muscles of respiration into play. The respiration varies between 50 and 60 and is jerky in character. Pulse rate is increased according to age. Temperature ranges from 104 to 105 and usually shows a morning remission of one or two degrees. Physical examination of chest in subscapular region may show moist, sibilant or sonorous rales or coarse mucous rales and at times distinct bronchial breathing, if the involvement is close to the larger tubes. Percussion shows dullness over small areas. As the disease begins to decline so do the symptoms by lysis, until temperature, respiration and pulse are near normal. The cough usually remains for sometime after symptoms subside.

Diagnosis.

If all the clinical symptoms which accompany croupous pneumonia, such as dullness on percussion, bronchial breathing, increased temperature, etc., are present, the diagnosis is easy, but they are not always present and may not develop for three or four days but the disturbed ratio between pulse and respiration, and character of respiration accompanied by cough will aid in diagnosis. One point to remember in children is that normally bronchial breathing is heard posteriorly between the scapulae; dullness is somewhat higher on the right side than the left. The diagnosis, then, rests in physical signs and findings to the exclusion of other diseases.

The initial symptoms of broncho-pneumonia show a great variance to the initial violent symptoms of croupous pneumonia. Here we have a history of prolonged catarrhal stage which precedes the actual disease, then we get the dry or moist cough, various mucous rales, bronchial breathing accompanied by a metallic sound, dullness over small areas, increased temperature, weak, fast, thready pulse, and respiration deep or shallow according to amount of secretion and previous health of child.

The prognosis in any type of pneumonia should always be guarded, no matter the pre-

existing physical condition of the child. Pneumonia complicating the infectious diseases, pertussis, diphtheria, typhoid, tuberculosis and rickets, is not favorable. Of all diseases which pneumonia complicates pertussis and diphtheria give the highest mortality. Of the two types, croupous pneumonia uncomplicated offers the most favorable prognosis. Type 3 infection is the most fatal. As stated, we can reasonably expect a favorable outcome in children who were previously healthy and who have a limited extension of disease. Still, the most severe infection often gives a good prognosis. Nurslings offer a better chance than those artifically fed. Children in foundling asylums, crowded quarters and those who have poor care offer very little in prognosis.

Treatment.

In treating pneumonia, the old outline of treatment—hygienic, dietetic, medicinal, etc.,—has to be gotten away from and the indications met as they arise. We have not as yet a specific treatment but in a measure a specific remedy that can help a great deal and to which I will refer later. Croupous pneumonia being a self limited disease, we are at a loss somewhat to know what to do for it sometimes. We cannot abort the disease or curtail its extension, as a certain number of cases will get well without any treatment; but there are certain conditions we have to meet. In the first place, when the diagnosis has been made, we should disturb the patient as little as possible by examinations and handling. A good nurse is the most essential adjunct. There should be warm mustard baths, liquid diet, daily evacuation of bowels, ice or mustard to chest for pain, a close watch on pulse and temperature, and, above all, a good night's rest, if it has to be secured by an opiate, codeine phosphate being the best. If the heart needs stimulating, caffeine sodium benzoate or camphor in oil can be employed. If the pulse is rapid, tinct. strophanthus is the drug of choice in children as it can be given over a period of time without deranging the stomach.

In regard to specific treatment I would like to mention one and that is Rosenow's Pneumococcic Antigen, given in proper dose for age and repeated until you see a change in symptoms for the better, usually after 24 to 48 hours. There will be a drop in temperature and pulse rate and the general appearance of the patient will be better. I have been using this antigen for the last three years in all forms of pneumonia and reasonably believe it a valuable adjunct.

What has been said in regard to the treatment of croupous pneumonia applies in a measure to broncho-pneumonia but in this type we have to be more aggressive for it is usually complicating other diseases and usually found in debilitated subjects. We have to deal with the cough and secretions of the lungs, which is most troublesome. The child has to have more supportive measures and closer attention. If the cough is tight, the croup tent offers one of the best measures for infants, combined with Liquor Ammonium Anisatis often repeated. If the cough is excessive in occurrence and secretion and if the child's general condition will admit, an emetic to get rid of secretions is indicated but should not be repeated during 24 hours. For high temperature, a warm mustard bath followed by an alcohol rub will be of benefit. If pulse is weak and thready, caffeine sodium benzoate can be relied on. In desperate cases with massive involvement, high temperature, bad pulse and cyanosis, more drastic treatment is required by stimulants. If secretions are excessive, the child should be upon a back rest as it can breathe better. Brandy in some form should be combined with Liquor Ammonium Anisatis every hour. Hot mustard baths and hot packs should be used to keep up the peripheral circulation and relieve the engorged lung and remove secretions. If heat is of no avail, covering the chest both anterior and posterior with dry cups will sometimes tide the patient over.

There are a great many other measures advocated which have their place in treatment, but I have found the above outline, modified to suit the conditions present, to have given me the best results.

Discussion.

Dr. Chas. E. Conrad, Harrisonburg: There is nothing special that I see fit to bring up except that auscultation is of little value in the so-called central pneumonia in making out the pneumonia process. This is probably a peripheral pneumonia instead of central pneumonia, and no physical signs are found on auscultation because the involved area does not come into connection with the hilus, and, therefore, no signs appear, it being a peripheral condition instead of a central one.

As Dr. Hartley stated, it is of importance in pneumonia of small children, to go over the chest very thoroughly, and eliminate any condition in which a question of appendicitis comes up, as that certainly does simulate it very closely. Fortunately, in chil-

dren, type four pneumonia is the one most frequently found, and type four, also fortunately, is the least fatal; consequently, it plays a very important part in the prognosis.

There is also a question of one other thing in the treatment: In the treatment of small children, especially under two years of age, we should pay a great deal of attention to the digestive tract, instead of all our attention to the lung condition. If digestion and nutrition are kept up it is very much in favor of a good prognosis in pneumonia of young children.

Dr. Walter Cox, Winchester: Some time ago I heard a very interesting paper by Lord, of Boston, on the causes of crisis in croupous pneumonia. Looking along the lines of chemistry, it was found that the different types of pneumococci produced a substance which could be recognized by the hydrogen ion concentration. It was found that when hydrogen ion concentration reached 5.3, it marked the crisis. Delayed crisis was due to absence of this material. The death of the pneumococcus at the crisis produced an enzyme which liquefied the solid material in the alveoli and caused easy absorption and resolution. It was an interesting paper, but nothing of practical interest has been evolved so far as I know. I have thought of it ever since in cases of pneumonia, and wondered if anyone had seen anything which suggested an application of Lord's discovery and work.

PEPTIC ULCER*

By J. A. RIFFE, M. D., Covington, Va.

Gastric and duodenal ulcers are essentially alike in their etiology, symptoms, and treatment. Whatever differences exist are due to the complications which may arise as a result of the difference in their location. Therefore, the general term peptic ulcer is used to cover the ulcers found in both the stomach and duodenum.

Etiology.—The etiology of gastric and duodenal ulcers has not been satisfactorily proven in all details. No doubt many factors enter into their production. Two factors have been pretty generally recognized:—(1) circumscribed malnutrition or necrosis involving the mucous membrane or walls of the stomach and that portion of the duodenum subjected to the digestive action of the gastric juice; (2) the digestive action of the gastric juice.

Clinical observation and post-mortem study, with extensive experimental work have furnished the grounds for the general belief that the initial factor in the formation of ulcer, local malnutrition, or necrosis, may be the result of many causes. Practically all these causes are the result of changes in the blood or blood vessels supplying the part. It is also believed that such local defects which are the result of malnutrition or necrosis would always undergo rapid repair were it not for the eroding influence of the gastric juice. It is significant that duodenal ulcers are located within one and one-half inches of the pyloric orifice. The duodenal bulb retains the gastric juice longer than any other portion of the duodenum. Only within this neutralizing field of the duodenum can an ulcer occur. Virchow in 1885 emphasized the importance of the role played by the blood vessels in the production of ulcer. Taking this as a working basis, experimental work and post-mortem studies show that thrombosis and embolism of the arterial twigs supplying the mucous membrane of the stomach and the upper part of the doudenum result in local malnutrition or actual necrosis. Experimental ulcers have been produced in lower animals by many methods. In many cases the agent employed has produced death of the tissue; ulceration was a natural sequence. The digestive action of the gastric juice hastened the disintegration of the slough. In some of the methods the vitality of the tissue exposed to the action of the gastric juice simply has been impaired. This has been accomplished by changing the quality of the circulating blood, by reducing the quantity of normal blood supplying the part, and by introducing poisons into the circulation that have a selective action on the cells of the mucous membrane exposed to the action of the gastric juice. A great many poisons introduced intravenously produce acute ulcers of the stomach and duodenum. It has been demonstrated that actual necrosis is not necessary as an antecedent to the digestive action of the gastric juice. It is only necessary for the cells to be damaged to a certain extent. It is believed that hydrochloric acid in the strength found in hyper-acid stomachs may act as a protoplasmic poison to cells already damaged and thus under certain conditions hyperchlorhydia may add to the devitalization of tissue and render it more susceptible to the digestive action of the gastric juice.

Before the discovery of microorganisms it was observed at autopsy that acute ulcers of the stomach and duodenum frequently occurred in pyemia and less frequently in many of the acute infections. In 1857 Lebert injected pus intravenously and produced acute ulcers of the stomach and duodenum. Soon after the discovery of microorganisms cultures of various bacteria were injected intravenously and thus it was found out that acute ulcers of the stomach and duodenum could be

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

produced by embolic bacterial invasion. For a good many years it has been observed that now and then the onset of ulcer symptoms seems to coincide with the development of an acute alveolar abscess, tonsillitis, or some other acute infection.

The intensive study of focal infections led to the discovery through animal experimentation that streptococci, irrespective of their source, when of a certain virulence, exhibit affinity for the gastric mucous membrane.

The tendency of all ulcers produced experimentally to heal rapidly has been known for many years. As yet experiments on lower animals have not wholly succeeded in producing typical chronic ulcers such as occur in man. Assuming that embolic bacterial invasion is the cause of local malnutrition or necrosis in many cases of acute ulcer in man, it would seem probable that the condition for healing might be so adverse at times as to cause the ulcer to become chronic. According to Rosenow and others, chronic ulcers contain few bacteria. All the evidence accumulated tends to substantiate the belief that ulcers of the stomach or duodenum would heal as rapidly as an ulcer elsewhere if it is not subjected to the digestive action of the gastric juice.

Morbid Anatomy.—It is significant that gastric and duodenal ulcers occur only where the tissues of these structures are exposed to the digestive action of the gastric juice, namely the pyloric end of stomach and extreme upper end of duodenum and are usually single.

Ulcers of the stomach vary in size from that of a pinhead to ulcerated surface involving the greater part of the organ.

Ulcers in both organs may be superficial, involving only the mucous membrane and submucous tissue. Or they may extend into the deeper layers involving the muscle layer or even the peritoneal coat. A deep ulcer may perforate into the peritoneal cavity. More frequently the peritoneal surface becomes adherent to the surrounding structures. Perigastric and periduodenal infection may result in a local abscess which is usually subdiaphragmatic in location. Stenosis of the pyloric outlet is one of unfortunate results of cicatrization of ulcer in that locality. The stomach may be deformed following healing as a result of scar formation.

Symptoms.—A gastric or duodenal ulcer may be present without causing sufficient trouble to arouse the attention of the affected individual. The presence or absence of subjective symptoms depends largely on the irritability or sensitiveness of the nerves or neuromuscular structures related to the ulcer. When peptic ulcer is associated with the conditions essential to the production of clinical manifestations, subjective symptoms are often present in such a typical form that a diagnosis may be made from the clinical history alone. It is very important to obtain a detailed account of the distress symptoms as they appear during a typical 24-hour period.

Upon careful questioning the patient, it will be found that when eating the usual three meals daily, the symptoms are likely to be as follows: In the morning before breakfast, the stomach being empty, the patient is free from distress. During the meal and immediately after there is no distress. If the symptoms are mild there may be no distress during the forenoon. If it does appear it is usually between 9 and 11 o'clock. As a rule, it gradually increases until it reaches its height, then gradually subsides as the stomach empties itself before the noon meal. If an excessive quantity of food and secretion is retained until the noon meal the distress may continue until relief is obtained by eating. If distress appears during the afternoon it is usually between 1 and 3 o'clock. Rarely does it appear as late as 4 hours after eating. The distress is likely to increase until it reaches its maximum intensity and then to continue as a steady or fluctuating distress until it grows less and disappears before supper. If a quantity of food and secretion is retained, the distress may continue until relief is obtained by eating supper. Unless a very light meal is taken at noon the distress is always greater in the afternoon than in the forenoon. Immediately after supper there is no distress. If the patient remains quiet during the evening there may not be any further distress. The more severe the distress in the afternoon and the longer it lasts, the greater likelihood of a return in the evening. If distress does return in the evening it is usually in from 1 to 3 hours after supper. In such cases the patient usually learns to take soda or a glass of milk before going to bed.

The symptoms thus described from morning until bed time may be a result of either gastric or duodenal ulcer. The more severe and prolonged the distress and the more regu-

lar its daily occurrence, the greater the probability that the ulcer is associated with pyloric obstruction and retention. When the stomach is normally empty the irritant is not present and the pain ceases.

In addition to the daytime symptoms as described, which are common to both the obstructive and non-obstructive type of ulcer, the patient with pyloric obstruction may complain that now and then, or perhaps regularly, he is awakened between 12 and 2 o'clock at night with similar pain. Pyloric obstruction complicating peptic ulcer is likely to be attended by another complication, namely, excessive gastric secretion. This secretion appearing in large quantity in the stomach after the greater part or all of the food has been expelled, remains largely uncombined. The degree of free HCl is usually at its maximum and the distress or pain is often the greatest experienced during the 24 hours. Because of the great pain the patient usually learns to provide himself with soda or milk which he may take when awakened by the night distress. The distress may cause vomiting, the vomiting usually brings relief. The amount of vomitus varies from a half pint to a quart. The amount of food contained in the vomitus is small. Now and then the relief obtained is temporary and distress soon starts up again. Relief may be obtained as before. Even though none of the relief measures have been employed, the distress may gradually disappear spontaneously in from one-half to three hours, or it may continue until morning to be relieved by breakfast. The spontaneous disappearance of the distress is caused by the gradual emptying of the stomach of the food and irritating secretion. When the distress continues until morning and is relieved temporarily by breakfast, it is probable that an excessive continued secretion with or without food has been retained all night. If the distress is pronounced, the fluid is usually rich in free HCl. Plainly visible peristaltic waves, lifting up the wall of the abdomen, passing from left to right and confined to the location of the stomach, are diagnostic of pyloric obstruction. In the absence of obstruction, the symptoms of gastric or duodenal ulcer seldom continue until midnight.

The clinical manifestations described are likely to vary in intensity from day to day and from week to week. There is a great tendency for the clinical manifestations to occur in attacks which vary in duration from a few days to several weeks or months. Many patients give histories indicating that an open ulcer has been present continuously for two or more years. It is not rare for patients to give a history of recurrent ulcer that has been present from 10 to 15 years.

When peptic ulcer is giving rise to clinical manifestations, the most constant and usually most important diagnostic symptom is epigastric distress. This distress varies from a slight discomfort to the most intense pain and this is often attended by epigastric depression or nausea. The distress or pain is usually limited to a small circumscribed area, whether peptic or duodenal. The most frequent seat of the distress is some where near the median line between the umbilicus and ensiform. Now and then it radiates to the back. Corresponding to the position of the circumscribed pain tenderness on pressure is usually present. This is not always constant. Vomiting is seldom a prominent feature. It occurs in less than half the cases. The vomiting of blood in connection with other signs and symptoms of ulcer constitutes one of the most positive symptoms of ulcer. This occurs in less than 10 per cent. of all cases. The infrequency of hematemesis as a symptom of ulcer is not an index to the frequency with which bleeding occurs. A certain amount of oozing occurs in a large per cent. of cases. If the bleeding is sufficient, cachexia may be present. The appetite is usually good. The patient often eats less than normal because of the fear of pain.

After an Ewald test breakfast, removed in an hour and titrated with a decinormal sodium hydrate solution, we get the following results:

In fifty per cent of cases hyperchlorhydria exists; the total acidity ranges from 60 to 120; free HCl from 40 to 100.

In slightly more than 40 per cent. of cases the acidity is within the normal; total acidity 40 to 60; free HCl 20 to 40.

In less than 10 per cent of cases the acidity is less than normal; total acidity less than 40; free HCl less than 20.

When the microscope reveals sarcinae or budding yeast cells in abundance, a retention of food over night has existed in successive days, for weeks or longer.

Bright red blood seen in streaks in the contents should be disregarded. Chemical tests

for blood may be used with caution. The absence of occult blood in the contents does not exclude ulcer.

Except when a large hemorrhage has taken place, visible blood is not present in the stool. Occult blood is not present in all cases of ulcer. There is nothing distinctive about the blood findings in the ulcer. If the patient has suffered large and repeated hemorrhages, there will naturally be a secondary anaemia.

Diagnosis.—Post-mortem statistics show that an open or healed peptic ulcer is present in 5 per cent of all adults dying from various causes. It should be remembered that in the absence of cancer or ulcer and their complications, real distress or pain is seldom attributable to a disorder of the stomach. Unquestionable general development of skill in the diagnosis of ulcer is greatly inhibited by such teaching as tends to belittle the value of accurate clinical signs and symptoms of ulcer and by unduly magnifying the value of the type of Roentgen ray examinations in most cases. It would be most helpful if we would realize that the most conclusive evidence of the existence of an unhealed ulcer is invariably to be derived from a careful study of the distress symptoms which lead our patients to seek medical relief. Careful observation is our greatest ally in making an accurate diagnosis of this malady.

A diagnosis of peptic ulcer should involve a careful study of its probable location, duration and complications. A search should be made in every case for evidence of the following complications:—(a) Pyloric obstruction; (b) Excessive continued secretion; (c) Perigastritis; (d) Perforation; (e) Perigastric adhesions; (f) Hourglass or other deformity; (g) Hemorrhage.

Very often a carefully obtained history together with such signs as may be disclosed at the first examination, reveals reasonably conclusive evidence regarding all the more important points as enumerated. This should be coupled with a thorough physical examination, chemical and microscopic analysis of stomach and bowel contents, an examination of the urine and blood. If after this has been gone through with we are still in doubt, a period of observation is often helpful. With rare exceptions the Roentgen ray investigations should follow rather than precede the accurate study of the subjective symptoms and such other signs of disease as are present. Roentgen ray evidence is of two types (1) direct, (2) indirect or contributory.

Direct Evidence.—The crater of a penetrating ulcer may be seen provided it is sufficiently deep and located where the projection or niche may be seen.

Indirect Evidence.—A spasmodic contraction of the circular muscle fibers producing a sharp indentation, usually on the greater curvature, may be found opposite an ulcer or scar.

Treatment.—Before starting treatment in a case of gastric or duodenal ulcer, a careful study of the conditions that attend the ulcer, its probable location, duration and complications should be made with a view of determining whether the cause is one for medical or surgical treatment. The following are the indications for surgery: (1) The development of carcinoma at the seat of the ulcer; (2) Perforation into the abdominal cavity; (3) Pyloric obstruction of such a degree as to interfere with medical treatment; (4) Perigastric abscess; (5) Hour-glass contraction; (6) Dangerous hemorrhage; (7) Foci of infection about teeth, tonsils and elsewhere should be removed.

Medical Treatment.—It having been pretty definitely worked out that a peptic ulcer would heal as readily as an ulcer situated any where else about the human body, if it were not for the digestive action of the gastric juice, medical treatment in order to be logical should have for its object the protection of the ulcer from this disintegrating action of the gastric juice by destroying this action over a period of time sufficiently long to allow the ulcer to heal. For a great many years it has been known that the digestive action of the gastric juice is due to the solvent action to pepsin in albuminous substances in an acid media. Pepsin is practically inert in alkaline and neutral media. A free acid such as HCl is required to permeate the albumin and prepare it for the action of the peptic ferment. By rendering the gastric juice alkaline or neutral and keeping it that way, we are able to make conditions such that the eroding action of the gastric juice is destroyed and as a result the ulcer will heal naturally. A brief outline of the treatment as outlined by Sippy is as follows:

Three ounces of a mixture of equal parts of

milk and cream are given every hour from 7 A. M. to 7 P. M. After a day or two a soft egg with crackers or bread and butter may be added to one of the forenoon feedings. Three ounces of a cereal, such as well cooked rice or oatmeal, may be added to one of the afternoon feedings. Gradually egg and cereal are added until at the end of the first week the patient is taking three ounces of the milk and cream mixture every hour from 7 A. M. to 7 P. M. and in addition is taking three soft eggs and 9 ounces of cereal; custards, cream soups, vegetable purees and other soft palatable foods may be a substitute for the milk and now and then jellies and marmalades may be gradually added if desired. In cases of peptic ulcer unassociated with stagnation of food, the free acidity is usually controlled by giving a powder every hour containing 10 grains each of heavy calcined magnesia and sodium bicarbonate, alternating with a powder containing 10 grains of calcium carbonate and 30 grains of sodium carbonate, midway between feedings. In addition the powders should be given every half hour after the last feeding until 4 or 5 doses are taken. The powder is stirred in half a glass of water immediately before taking. If diarrhea develops, the calcium carbonate and soda powders should be substituted a sufficient number of times for the magnesia and soda powders. If constipation develops, a reverse substitution is required. At the beginning of the fourth week, three small meals are instituted with 3 ounce feedings of cream and milk between. The powders should be given every half hour for three or four doses, after each meal. This should be kept up until we are sure the ulcer has healed,—that is until the patient has been free from pain or distress over a long period of time while on a liberal diet. The treatment of peptic ulcer with obstruction is the same in principle as that described, except in addition it is often necessary to give larger doses of alkali and to empty the stomach each night with a tube about a half hour after the last powder; and if the condition is exaggerated, it may be necessary to empty the stomach again at midnight, thus removing the greatest stimulus to an excessive night secretion.

Discussion.

Dr. A. L. Tynes, Staunton: I just want to make two or three remarks on this very interesting paper: One regarding the use of alkalies as a diagnostic point. I believe that I can safely say that it has been the experience of most of us in the treatment of gastric pain which we suspect to be due to peptic ulcer, if we give alkalies in sufficient quantity and we do not get relief in twenty-four or thirty-six hours, we had better consider revising our diagnosis.

As to the use of alkalies in hemorrhage: In the presence of occult blood we should normally expect administration of alkalies to control the hemorrhagic condition within forty-eight hours.

The use of alkalies as a post-operative therapeutic measure, I think, is one of the most recent advances in the treatment of this disease. In the conditions where alkali treatment has been given, practically the same alkali medications and the same diet as was used prior to operation should follow all operations for gastric ulcer.

CONGENITAL HYPERTROPHIC PYLORIC STENOSIS.*

By J. M. EMMETT, M. D., Clifton Forge, Va.
Chief of Staff, Chespeake and Ohio Hospital.

It seems to me that the literature on this subject has been too closely allied with the advances in surgical technique to be of any real value to the general practitioner, and it is the general man who is called upon to determine the course of these patients. I am, of course, interested in the surgical side but I shall try to limit my remarks principally to the medical and diagnostic technique.

The condition of congenital hypertrophic pyloric stenosis received its identity from Dr. Wm. Osler in 1903. Since that time each year has seen an increasing number of reported cases. Correlation of cases in 1914 showed that more than 1,000 had been reported. Today every clinic has its series under development.

The condition often occurs in the first baby, although it may occur in later children. The large percentage of reported cases has been in breast-fed children. The earliest case occurred in a four-day-old infant, the latest case in an infant seven weeks old. It is said that it never occurs after the ninth week but I should like to amend this statement by saying that it does not occur as a complete obstruction after nine weeks, although mild pyloric hypertrophy has been observed in later life during the course of upper abdominal explorations.

The cause of congenital pyloric stenosis is not well established. Probably Downes' explanation of edema caused by circulatory disturbances resulting from increased peristalsis trying to force gastric contents through the narrowed pyloric lumen is the most practical.

The symptoms may be classical or varied.

*Read at the meeting of the Medical Association of the Valley of Virginia in Clifton Forge, September 28, 1922.

The typical case shows an infant a few days or a few weeks old, normal until the present attack, who begins to vomit without any apparent cause, the vomiting occurring during or immediately after eating, and it is usually explosive in character, often being expelled several inches from patient's mouth. At first, the vomitus is the ordinary nourishment which the patient has taken. Frequently one or more feedings may be retained only to be lost later. After the spasm of vomiting has ceased, the baby is left hungry. The babies are constipated, they often have frequent small stools with little or no fecal matter, only a slight yellow stain. The degree of constipation depends upon the completeness of the pyloric occlusion. The babies void very scantily, due to the dehydration. Emaciation occurs very rapidly and, if the obstruction is complete, death ensues without much delay, although the cases of partial blocking may linger on for weeks. Examination in the early stages may not show very definite symptoms but as the disease progresses a fullness in the upper abdomen with a definite peristaltic wave beginning on the left side and extending along the course of the stomach and ending just to the right and slightly above the umbilicus is observed. This peristaltic wave is best observed immediately after eating, or during the course of the feeding. The real diagnostic point though occurs in being able to palpate a small tumor over the pyloric end of the stomach. This tumor is about the size of an olive and it is usually located in the mid-line between the umbilicus and ensiform cartilage, although occasionally it is high up under the ribs on the right side, and such a position makes definite palpation difficult. The tumor feels hard and dense although it is freely movable. One can best locate the tumor when the stomach is empty. Some observers have advocated the administration of a mild anesthetic for the examination of the tumor when it is difficult to locate, but I do not think such a procedure is well warranted. The one condition that has mixed us up on this diagnosis is pylorospasm. A great many authorities condemn the identity of a true pylorospasm; however, I, myself, have observed cases that gave some of the classical symptoms of pyloric stenosis and I watched these cases operated upon only to find no tumor present. Later, under medical treatment, they were cured. Such a failure to find pathology has gotten surgical intervention in disrepute among certain good men. In any infant between the ages of four days and seven weeks who starts vomiting without a cause, and who has been previously well and developing rapid emaciation and obstinate constipation, a careful observation and investigation is worth while. In 1912 Hiss described the use of Nelaton's catheters to determine the size of the lumen in the pylorus. This method will clear up for you the diagnosis between pylorospasm and congenital stenosis. With a baby well fastened in a sheet and held in an upright position no difficulty is encountered in passing a 14 Nelaton's catheter through the stomach into the pylorus. Of course in the true stenosis cases it is impossible to get the catheter into the pylorus. Strauss of Chicago has advocated the use of the fluoroscope following bismuth meals. He says that the peculiar snake-like contractions observed in the pylorus and not in other regions of the stomach are definite. This, of course, can only be done when the doctor has access to the X-ray. I do not consider it a very important diagnostic agent anyway.

I believe that all of these patients, if they are recognized early, should be treated medically first. The contributions along non-surgical lines have been very gratifying. The thick cereals with atropine, beginning 1-1,000 solution and gradually increasing the amount of the atropine, have gained a very definite place in the treatment of this condition. Of course, the condition is potentially surgical and, if the baby shows signs of losing ground, surgical treatment should be instituted. Whenever a baby shows a 20% loss of weight surgical treatment should be sought.

The pathology at autopsy shows a hyperplasia of the circular muscular fibers of the pylorus. The longitudinal fibers are involved to a lesser extent. The thickening is at times so great as to completely occlude the lumen of the pylorus and is more marked at the duodenal end.

H. Leslie Moore has recently reported a case of congenital pyloric stenosis complicated with pylorospasm. It occurs to me that if our reasoning is correct then all cases of stenosis must be complicated with pylorospasm, some probably more decidedly than others. I feel sure that a great many of these patients have been operated upon unnecessarily, but I

am equally convinced that a careful painstaking observation will save many children that we have previously lost from what we termed dietary disturbances.

The surgery of this condition is rather simple. Since Downes popularized the Rammstedt operation a few years ago the operative mortality has been appreciably lowered.

I feel that the question of hemorrhage following this operation has not been quite decidedly enough stressed. I have seen one fatal hemorrhage occur following the Rammstedt operation. Although it was not determined what part started bleeding first, I am convinced that the primary hemorrhage was in the pyloric incision and later from the abdominal incision, the latter resulting from a general disturbance of the blood-forming system. Although I have not tried it I feel that the Strauss modification of the Rammstedt operation is probably worth while and will lessen this tendency to hemorrhage. The nutrition of these patients is frequently bad and we often observe sloughing sluggish wounds. I feel that the wise course in these patients would be to make your incision high up over the edge of the liver in order that you would have to retract the lower edge of the liver to get in the peritoneal cavity. The tumor should be hooked up with the index finger and operation on the pylorus done. When completed the stomach is dropped back in the belly-cavity. The liver returns to the former site creating a degree of pressure against the abdominal wall and also preventing a future hernia. There are certain principles that must be observed in operating upon infants. They should be kept warm with hot water bags on the table, the instruments should be small and well chosen. Babies do not stand the loss of blood, neither do they stand a long deep anesthetic. Babies under one month of age are very readily operated upon without any anesthetic at all. As soon as practical after operation, feeding should begin and arrangements for fluid intake must be allowed for.

Summary.

1. Any child a few days or a few weeks old who begins vomiting without any apparent cause should be kept under observation.

2. Constipation, rapid emaciation, decreased urine output with the definite peristaltic wave observed over region of stomach are suggestions of congenital hypertrophic stenosis or pylorospasm.

3. The question of pylorospasm can be cleared up by the fact of being able to palpate a definite tumor or by the passing of a number 14 Nelaton's catheter. No difficulty is encountered in passing this instrument in the cases of pylorospasm whereas the obstructed pylorus will not admit of the catheter in the stenosis cases.

4. Medical treatment should be tried in all cases when they are found sufficiently early. However, when a 20% loss of weight is observed, surgical methods should be resorted to.

5. The surgery of infants requires special instruments, carefully selected.*

Discussion.

Dr. P. W. Boyd, Winchester: It has been my good fortune to see but one case operated upon, and I think many cases respond to medical treatment, and that this should be tried out thoroughly before resorting to surgical means. Dr. L. W. Sauer of Evansville, Indiana, reported thirty-five cases of pyloric stenosis, twenty-eight of which were treated by thick gruel feeding. I believe, of the twenty-eight cases, twenty-four responded to this treatment.

As you know, the recognized authorities agree that the Rammstedt operation is the more practicable of the two. Even in this we are liable to have some complications. In one case operated upon by Dr. E. C. Stuart at Memorial Hospital, the tumor was palpable, and when the abdomen was opened the tumor was much larger than one would expect. The operation was very skillfully done. During the procedure, when the muscles were divided sufficiently, we could hear a slight bubbling of air. The thought occurred to him to cover the gap made by dividing the muscles, with a flap of peritoneum. This was evidently very successful as the child recovered promptly, the convalescence was uninterrupted, and there was no vomiting after the operation. I believe this would prevent many accidents if we put an omental patch over the muscle which has been divided as a good many post-operative accidents seem to occur.

Thick gruel feeding should be tried out before operating. The preparation of the gruel is very important. It is made from about four ounces of milk, twelve ounces of water, and two and one-half ounces of barley or rice flour. It should be boiled until its consistency is such that it will stick to the spoon when held up. Then feed it by pressing it in the mouth by a spatula. It is very troublesome, and requires a good deal of care in the administration of the food. It is often retained and the patient relieved. It is to be used in post-operative cases as well as those which do not require operation.

Dr. Kenneth Bradford, Staunton: I had one of these cases in a baby of six weeks which presented all the classical signs and symptoms. It was impossible to do the Rammstedt operation, so gastro-enterostomy was done with uneventful recovery. General practitioners should know well the early symptoms, because they can be easily confused with vomiting from indigestion and soon become poor surgical risks.

*Four cases were reported in detail, one of which was taken from the records of Dr. C. C. Coleman, of Richmond.

It occurs in breast-fed babies almost altogether, and it nearly always occurs in the early weeks.

Dr. R. P. Bell, Staunton: One of my reasons for coming today was to see how many cases Dr. Emmett would report. I was curious to know whether there were many more in this community than in Staunton. I have only seen one case in Staunton. Seeing reports of rather large numbers of cases coming from other places, I wondered if we were diagnosing it incorrectly at home, or if it did not exist. There has been only one baby in thirteen years in our community to have it. We have had vomiting infants, of course, but all cleared up without operation. This was a case of complete stenosis. It is the only one operated on by me. After I got in the abdomen, what impressed me was the hard brawny feel of that pylorus, more like a wooden spool than anything I can think of. I could feel the depression in the duodenal end, but there was absolutely no passage way. The line of junction between the edematous and soft tissue was sharp. I attempted to do a Rammstedt on the pylorus, and made an opening in the mucosa. I did not think of a graft, but patched up the hole, and then did a gastro-enterostomy, fearing to trust the Rammstedt. The child got along all right.

Dr. C. E. Conrad, Harrisonburg: Most of these cases are seen about the third week and come to operation the fourth or eighth week. At Babies' Hospital, New York, I saw post mortem specimens from two days to two years after operation, showing the results after operation. At careful autopsy two years after, you could see nothing but a hair line, and the pylorus seemed the same as would be expected except for the hair line where the two ends had come together. The specimens at two days, three weeks, six months, and two years, showed the repair nicely, and I was in hopes of getting more definite information, but could not find the magazine the report was in. It was very interesting to see these autopsy specimens.

At the Babies' Hospital they are much slower in putting the cases to breast. Four c.c. of breast milk and four c.c. of barley water are given every three hours, and increased every other feeding by four c.c. of breast milk until thirty c.c. are being given. The cases are not put to breast until five days after operation, and only for one feeding, gradually working up. They use heat to support body temperature, and clysis to take care of the fluid end. They got good results in nearly all cases operated on.

Dr. J. M. Emmett, Clifton Forge, closing discussion: I think I have answered Dr. Bell's question concerning the frequency of these cases in our community. One of the cases I reported was Dr. C. C. Coleman's of Richmond. I was associated with Dr. Coleman at the time this case was handled and I have reported it because of the unusual termination.

In reference to the 28 cases of definite pyloric stenosis with a permanent cure of 22 under medical treatment which Dr. Boyd has just mentioned. I doubt very much if these 28 cases were all true hypertrophic pyloric stenosis. It would be quite easy to include in such a series cases of pylorospasm. I feel that a great many cases with symptoms of pyloric stenosis respond to medical treatment but I doubt very much if true hypertrophic pyloric stenosis ever responds to any treatment except operative. A definite diagnosis can only be established by tubes or fluoroscopic examinations. Dr. Wm. Downes, of New York, says that no case with a definite palpable tumor ever responds to medical treatment. The administration of atropine may control the pylorospasm associated with these cases, but I don't believe that it will materially improve the hypertrophic changes which are already present.

In answer to the question about early feeding. I wish to say that I know nothing about the feeding of infants; that end of the treatment is left entirely to our medical men. My records show that my cases were all fed early and from my small series of cases I cannot see that any material disadvantage has followed this method. Only one of our cases died but this was due to a hemorrhage which I think began primarily in the pyloric incision, and later was associated with general hemorrhage, due probably to some interference with the general blood forming system. No coagulation time has been taken on any of our patients and I have considerable doubt as to the coagulation time before operations anyway.

THE PRACTICE OF MEDICINE FOR FORTY YEARS.*

By W. H. F. MILLER, M. D., Clifton Forge, Va.

In selecting the past forty years as a topic for discussing the advance in medical science, I know that what I shall say will not be new to the older members of this society, but, if nothing more, it may be of interest to the younger ones.

I have selected this period for two reasons. First: it is the time in which I have served my apprenticeship in the domain of the healing art. Secondly: although medicine has been continuously progressive from the earliest recorded times, the past forty years have been so prolific in such startling, varied and beneficial progress that it may well be placed in the forefront of all other periods.

Among the more important innovations which we older members of the profession have witnessed is the interest taken in better medical education. In 1882, with one or two exceptions, the medical colleges of the country required only two sessions of six months each, in which a student was expected to graduate. Some schools curtailed this to two sessions of five months each and it was possible, in one school at least, to complete the course in nine months. Not only this, but the country was infested with bogus colleges, many of which would furnish a certificate of graduation without other qualification than paying a fee. No legal prerequisites were demanded in most of the states.

During the early seventies a few states began examining those who wished to take out a license. This movement gained rapid headway until in the eighties most of the states followed suit. Virginia began examining in 1885. The result was that many men were found deficient and denied a license. This

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

procedure resulted in lengthening the course of study to three and four years as we have it at present.

The past four decades have been prolific in what we may call independent investigation, made possible by the many donations and bequests, some of them of enormous sums, given solely for this purpose. The result of these philanthropies has been of inestimable benefit to the profession at large and to humanity in general. The especially trained laboratory workers have by their untiring devotion to their work made so many discoveries that but few of them can be mentioned here, but we may enumerate especially the hookworm campaign of the Rockefeller Institute, which has reclaimed thousands in our own country from lives of mental and physical deficiency. I would say, in parenthesis, that one-half of the world is in the so-called hookworm belt. The cause of yellow fever has been discovered and the stegomyia mosquito convicted of being the medium of transmission, through the patient research of Gorgas and Noguchi. It is through their work that this dread disease, which yearly decimated the tropical regions of Central and South America, has literally been abolished from the face of the earth. Malaria has been so effectually brought under control that the areas in which it has always been endemic have been reduced by one-half.

Governmental, State and National supervision of health, unknown thirty years ago, has accomplished even more than was hoped from it in the beginning, as evidenced by the amelioration in typhoid, diphtheria, smallpox, tuberculosis and kindred diseases.

Although bacteria had been discovered many years before the period under discussion, their significance was not fully realized until later. The years 1884-5 may well be termed the red letter days in bacterial discovery and its elaboration into a definite science, for in 1884 Koch discovered the comma bacillus of Asiatic cholera and in the same year Klebs and Loeffler, working independently, proclaimed the isolation of the bacillus of diphtheria, which henceforth was known by their names. In the same year pus organisms were differentiated and classified. Tetanus bacilli were discovered in 1885 by Nicolaier and their biological characteristics described by Kitasato. In 1892 the same Japanese investigator succeeded in isolating the baccillus of bubonic plague. From these beginnings we may trace the discovery of many other micro-organisms and as a sequel the anitoxins' beginning with that of Behring's diphtheria antitoxin. The phagocytic properties of the leucocytes was recognized by Metchnikof in 1886.

Later on came the bacterial vaccines. Mention may be made especially of the typhoid vaccine which has rendered that scourge, which in modern warfare was wont to kill more than the enemy's bullets, negligible compared to what it was before 1900.

Hence, we can see that the past forty years has been the era in which the etiologic, prophylactic and therapeutic value of bacteria has come to be recognized.

In the early eighties Lister promulgated his antiseptic theories which were generally accepted, especially in this country. It is interesting to quote Bryant, then one of the leading surgeons of the world and an acknowledged authority, as late as 1885. In writing on ovariotomy and the removal of the uterus to hasten the cessation of menstruation he says: "The wonderful success of Keith and others, believing in the methods of Lister, convinces me that all surgeons should give the patient the benefit of the doubt. We may not believe in it but no one has proved that it increases the mortality." The mortality in removal of the undiseased ovary was 22.06 per cent.; what must it have been in cases of infected tubes and ovaries? The same writer states that removal of the uterus should under no circumstances be undertaken until the size of the tumor is such as to endanger life or to render existence unbearable. Before Lister's discoveries surgeons were loth to open the abdomen save as a last resort, except in the case of traumatism. Lister's antiseptic methods were the foundation stones on which modern asepsis was built and familiarity with the pus forming organisms was the chief factor which led to the elaborate aseptic technique in vogue at the present day.

With all the cavities of the body invaded, without having the angel of death hovering over with fluttering wings, surgery took on new life and it soon became apparent that the hospital, with all its facilities, was needed for major operations. In 1885 there were very few hospitals save in the larger cities, and they were built and maintained solely for the benefit of the indigent. This fact was the reason that for a long time there was an antipathy to entering a hospital, even though

one paid his way. In the year mentioned there was only one hospital in Richmond, and if my memory serves me aright none other in the State. There were infirmaries in the public institutions and the Retreat for the Sick. But the only real hospital was St. Luke's, Dr. Hunter McGuire's private institution. The Old Dominion Hospital, on the College grounds, was little better than a dispensary. Of course there were no trained nurses, for the trained women of today were unknown. While a resident at the Retreat for the Sick we picked up attendants wherever we could find them, often having a new staff every two or three weeks,—women without any training whatever.

New methods and bacteriology together with the recognized importance of laboratory investigation are responsible for the increase in the number of hospitals and sanitaria also for the trained nurse who receives her training in these institutions. It is needless to expatiate on the blessings that ensue from this advance in medical science. Typhlitis and perityphlitis have become obsolete and in their place there is appendicitis. As late as 1890 Wyeth in his text book on surgery makes no mention of appendectomy. Previous to that time typhlitis was a medical disease, attributed to an inflammation of the connective tissue about the caecum. Doubtless the sloughing or perforated appendix, when found at autopsy, was looked on as the result rather than the cause. It may be interesting to note that the significance of the leucocyte and differential blood counts was first recognized in an endeavor to differentiate between a simple and a suppurating appendicitis.

Endocrinology is a science that has come into being within the past few years and, as yet, it is apparent that we are only on the threshold, for there is much more to be learned about the ductless glandular system.

In the field of physics two very notable discoveries have added a glamour to the past forty years—Roentgen's discovery of the so-called X-rays and Mme. Curie's isolation of radium. I suppose some of us older men can look back on the wonder, almost incredulity, we experienced when confronted by reproductions of the first X-ray photgraphs as published in the medical journals,—a few coins, a key and a knife, said to have been enclosed in a pasteboard box and exposed to a photographic plate in a light tight envelope; also to our amazement on seeing the bones outlined or a bullet embedded in the tissues, while using the fluoroscope. Now, through the improvement in apparatus and in technique and the learned ability to interpret what we see, there are few parts of the body hidden from our eyes. It is doubtful whether Mme. Curie foresaw, after her discovery of that mysterious and miraculous element, radium, that its chief field of usfulness to the human race would be in the domain of medicine.

Spinal puncture is comparatively a late procedure and intraspinal medication dates from Flexner's production of antimeningococcus serum about ten years ago.

Mechanics has added much to our facilities for diagnosis and treatment during the past forty years, not only in refinement in the manufacture of instruments but in the assistance given by instrument manufacturers in filling the designs for new instruments submitted by the medical inventors. The sphygmomanometer, a late invention, has opened to us a new field of investigation and demonstrated the causative factor in many previously obscure conditions and, in many instances, enabled us to ward off disaster. The cystoscope has made practicable the ureteral catheter. The bronchoscope, the Murphy button, and the intubation tube, are all inventions which have made their appearance within the past thirty or forty years.

Therapeutic advance has made many strides within the memory of most of us. Most of our synthetic drugs, practically all the coal tar preparations, active principles and glandular extracts are modern in their distribution to the profession. Of course salvarsan, its combinations and varieties, are of recent introduction. Standardization of drugs is comparatively a modern improvement.

In 1890, while at the Polyclinic in New York there was exhibited to the class the first tablets, as a curiosity. This method of prescribing has been generally accepted and the compact tablet case has supplanted the saddle bag for the country doctor, just as the buggy supplanted the saddle and was in its turn displaced by the automobile. The tablet is also responsible for the elimination of a good deal of guess work in prescribing.

Blood chemistry analysis of gastric and in-

testinal contents has been much elaborated of late.

Enough has been said to demonstrate what great advance has taken place in all branches of medical science during the past forty years and much more might be added. Despite all these added facilities toward the warfare against diseases we must be impressed by the the fact that the older men who were denied these privileges were eminently successful in the combat. How little of the fundamentals were unknown and what a clear understanding of the science in all its ramifications they possessed and how much we owe to them can be best understood by reading the text books of forty or fifty years ago.

Modern medicine is but an improvement on the older science. It is a far cry from Watt's teakettle and Stephenson's rocket to the modern Mallet locomotive but the principle involved is the same. One is but an improvement on the other and so it is in medicine.

It has been said that specialism and the so-called group practice will sound the death knell of the general practitioner. It will not in your time nor in mine. In the large cities he may lose some of the characteristics of the family doctor but in the less densely populated towns and in the country he must, perforce, continue to be the all-round man, treating every ailment from the time of birth to the time of death; better equipped, perhaps, than the generation before him but none the less the mainstay of the community and the sympathetic friend on whom all may and do call in the time of trouble; willing and anxious to seek counsel and help from those who have devoted their talents to the study of some special branch and to take advantage of the facilities offered by the numerous hospitals and of the skill of the modern surgeon, which the past forty years have placed at his disposal.

TETANUS.*

By LANIER D. POLE, M. D., Hot Springs, Va.

My reason for bringing this subject before you is not that I have anything new to offer, but I feel that we men in private practise come upon tetanus so seldom, that we are very apt to forget that it may occur. Of course, if we were called at once to treat every wound, and were to treat every puncture wound as we were taught in our Principles of Surgery, and give each patient suffering with suspicious wounds anti-tetanus serum, we should almost never be called to treat a case of tetanus.

Unfortunately, the public attaches very little importance to superficial punctures of the hands and feet. Most persons make an effort to remove the nail, splinter, or what not, and apply a little tincture of iodine, dioxogen or turpentine to the surface, and believe that they have done all that is necessary, and in a week or so call a physician to treat a fully developed case of tetanus—as will be brought out in the case I am going to cite.

We should use every chance to impress upon the public that "lock jaw" is not caused by pain, as a great many believe, and try to teach our patients to recognize the dangerous kinds of wounds so they will have them treated at once, impressing on them that tetanus can be prevented very successfully by opening the wound to the bottom and by the giving of tetanus antitoxin. As a rule one dose of 1500 units given under the skin is all that is necessary, but in certain suspicious wounds we should give three doses at intervals of a week.

Recently I was called to see a boy of 8 years whose mother gave me the following history. Coming from the garden he ran a splinter from the porch into his foot. One of the family made an effort to remove it and, believing she had gotten it all out, put on turpentine and thought no more of it. The wound healed without giving any trouble. Seven days later he complained of pain in the neck and back muscles, but did not seem sick, so the mother thought nothing of it. On the eighth day the pain in the back was more troublesome but still he played and went in swimming as usual. That night he had difficulty in eating and during the night cried out several times with a pain between his shoulder blades, but went back to sleep in a few minutes.

The next morning I found him with a temperature of 99°, pulse 90, able to open his mouth with difficulty, muscles of neck and back very rigid, and head drawn back. During the examination he had a convulsion which lasted only a short time. The wound seemed perfectly healed, with no tenderness, swelling, or redness. I opened up the foot and about a dram of cloudy serum ran out. I removed a splinter 1¾ inches long, about the size of a

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

match stem, cleaned and packed the wound with iodine, and gave him bromide by mouth and chloral hydrate by rectum. It was not until later in the day that I was able to get any antitoxin, and then only 3000 units. During the day he had two more convulsions and the rigidity of the muscles increased, until he was able to open his mouth only slightly.

That night I called Dr. Emmett in consultation and he gave him 5000 units in the spine and 5000 intravenously, one-eighth of a grain of morphine by hypodermic, and kept up the chloral by rectum and bromide by mouth. He improved for two days and then became restless and had a convulsion. I gave 5000 units intramuscularly and increased the chloral, but he did not improve in 24 hours, so I gave him 5000 units in the spine. Within 12 hours he was much better, being able to open his mouth about one-third inch and the muscles of the back were much less rigid.

He continued to improve rapidly from this time and was able to go to his home in two weeks and in another ten days seemed perfectly well.

DISCUSSION.

Dr. B. B. Dutton, Winchester: I want to say that, in the treatment of tetanus, the most important thing is prophylaxis, giving serum and giving it early. The incubation runs from four to twenty days. Serum should be repeated in ten days, as it gives immunity for only that length of time. The wound should be thoroughly cleansed, removing all foreign substance and traumatized tissue which has been devitalized, and a wet dressing of peroxide of hydrogen, magnesium peroxide or calcium peroxide applied. When you have a compound fracture or any old wound which you will not open up until a month or so afterward, you should give an immunity dose of serum at that time, as you may have tetanus develop. After the case has developed, the only treatment is to give sedatives, as chloral hydrate, chlorotone, luminal or morphia, and doses of antitetanic serum at once, twenty thousand units intraspinally, intravenously, intramuscularly, or subcutainously, or combined and repeated in twelve hours if necessary. If you are afraid of anaphylaxis in these cases, give 1 c.c. serum and wait half hour. If no symptoms develop, you are safe in going on with the treatment.

In severe cases with fast recurring convulsions, magnesium sulphate should be used intraspinally.

ROENTGENOLOGY IN ITS RELATION TO THE GENERAL PRACTITIONER.*

By W. M. PHELPS, M. D., Colonel M. R. C., U. S. Army, Staunton, Va.

Roentgenological procedure has become a most important factor in diagnosis as well as a great aid in the treatment of many pathological conditions.

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

About twenty-five years ago, Professor Roentgen startled the scientific world with the announcement of his discovery of what he called the X-ray. Since that day physics and chemistry in the hands of inventive and constructive geniuses have contributed such a vast amount of material adapted to the practical utilization of the X-ray that it has probably become the most important single factor in scientific diagnosis. And the great improvements in the apparatus for roentgeno-therapy have resulted in most promising achievements in the treatment of many pathological conditions that heretofore have resisted therapeutic agencies.

A discussion of the expensive and complicated apparatus required for effective roentgen diagnosis and therapy does not come within the scope of my subject nor shall I consider at this time the technical procedures involved in their use. However, I want to emphasize the fact that the general practitioner of medicine or surgery should possess a theoretical knowledge of these procedures to enable him to co-operate with the roentgenologist in obtaining the best results for the patient.

Roentgenology is taking its place as one of the most highly specialized and technical branches of scientific diagnosis and, as in other specialties, the value of this work will be proportional to the time and study devoted to it by the one making it his specialty.

It has not been so many years ago that the family doctor per force of circumstances had to be his own specialist in all branches of diagnosis and therapy, not only functioning as an internist but also as a general surgeon as well as laboratory expert, oculist, aurist and what not, at the expense of his own peace of mind and the welfare of his patient.

The general practitioner was the first to realize the necessity of specialized assistance in his conscientious fight against the thousand natural shocks that flesh is heir to and, as the result of his insistence and co-operation, the "art" of healing is rapidly becoming a science through the agencies of specialized departments in the various branches of medicine and surgery.

The relation of the roentgenologist to the physician and surgeon differs materially from that of other specialists, as the results of his examinations are entirely for the information of the doctor who refers the case for exami-

nation and thus the doctor, not the patient, is his client.

The medical man must remember that a roentgenogram is not a photograph and that what the plate or fluoroscopic screen visibilizes is a series of shadows produced as a result of the differences in density and absorptive powers of the tissues through which the X-ray passes on its way to the plate or screen and that the value of the examination depends not only upon the excellence of the technique but also upon the ability of the expert to properly interpret the meaning of the shadows observed. The interpretation from which diagnosis is made is governed by what is actually seen on plate or screen; however, it must be borne in mind that a variety of different pathological conditions may present exactly the same roentgen appearance; therefore, to enable the roentgenologist to make a differential diagnosis, it is essential that the referring physician co-operate with the roentgenologist in an effort to determine the exact nature of the pathology present as otherwise the roentgenologist could determine from his examination only that one of several possible conditions is present.

Diagnostic technique and interpretative accuracy have advanced rapidly during the past five years so that at the present time roentgen procedure lends itself not only to a determination of anatomical relations of the various structures of the body but also in many cases visibilizes functional activity. Because of their density osseous structures of the body are most readily demonstrated in X-ray examination. Fractures and dislocations are readily demonstrated even when their absence or presence can not be positively determined by physical examination. In my practice I have observed a number of cases of fractures which clinically were justifiably diagnosed as simple sprains or contusions. On the other hand, I have had several cases referred to me in splints and casts which upon X-ray examination proved that an erroneous diagnosis of fracture had been made.

Many bone diseases present definite characteristic roentgenographic appearances, but it must be borne in mind that pathological conditions of the bones can not be visibilized until actual change in structure has been produced by the pathological process so that either the absorptive property, or density, of the tissues has become sufficiently changed by the pathological conditions present to affect the passage of the ray through them. As an illustration, let us consider osteomyelitis: An active, infectious process may be present in the medullary canal or may even have penetrated the Haversian system and still no change in density have occurred. Not until actual destruction of the tissue has taken place can changes in the structure be visibilized by the X-ray, so that in the very beginning of osteomyelitis it is impossible to demonstrate its presence. However, I have observed definite diagnostic changes in this disease in less than a week after clinical symptoms were manifested.

Changes in the bone or periosteum produced by syphilis, tuberculosis, malignancy and various benign tumors can usually be definitely recognized before the clinical symptoms in these structures have manifested themselves. The point I wish to emphasize in the instances I have cited is that the referring physician must not expect the roentgenologist to demonstrate the presence or absence of pathological conditions until definite change in normal structure has occurred with resultant change in density or X-ray absorptive properties of the tissues concerned, and diseases of the bones which are not accompanied by either productive or destructive pathological changes can not be demonstrated by means of the X-ray.

In disease affecting the head, it is possible to confirm or disprove a clinical diagnosis of sinusitis or mastoiditis after the parts concerned have become infiltrated with pus, thus changing the X-ray density of the cavities concerned, or when vegetative processes have developed in the lining membrane or sclerotic changes have occurred.

In examination of the teeth, apical changes can be shown and often are correctly diagnosed even in the absence of objective or subjective symptoms.

The chest cavity lends itself well to the exploration of the X-ray. The heart is readily visibilized and by modern methods its exact size and condition determined. All diseases of the lung and pleura whose pathology is accompanied by either productive or destructive processes are easily shown on the fluoroscopic screen or roentgenographic plate and in many cases the appearances presented are pathognomonic of definite diagnostic entities.

The alimentary canal may be visibilized in

its entirely and many conditions of this tract definitely revealed that could only be guessed at or possibly entirely overlooked by any other means of examination. As you know, in making an examination of the digestive tract it is necessary to first administer a barium meal or enema and it is the shadow of this radiopaque material that is really seen on the screen or plate and it is the behavior of this material in its onward passage lining the interior of the tract that gives us our diagnostic data. The use of the barium meal for a gastro-intestinal roentgen study is based upon the fact that the stomach and intestines have the same or less radio density than the muscular wall of the abdomen and therefore would cast no shadow or rather their shadows would be obscured because of the inter-position of other tissues between the X-ray tube and the plate.

The subject of relative tissue density is an important one in making a roentgenological examination. The consideration of this subject will explain why the roentgenologist often fails to demonstrate the presence of gall-stones for in some cases gall-stones though present will have a density corresponding to the tissues surrounding them.

The kidneys, fortunately, have a greater density than the other abdominal tissues and therefore cast a definite shadow. However, it can be readily understood that in order to make a satisfactory roentgenogram of the kidneys the alimentary tract should be completely emptied by purgation and enema, otherwise the density of the contained material would cast an obscuring shadow over that of the kidney shadow.

The time limit of my paper prevents a discussion of the many pathological conditions of the abdominal contents that can be diagnosed by means of the roentgen ray and I can only remark in passing that the roentgenologist is now able to accurately diagnose many diseased conditions of the contents of the abdominal cavity that heretofore could only be discovered by means of exploratory surgical procedure.

I shall merely mention the use of the X-ray in localizing foreign bodies in various portions of the anatomy for, as is well known to this Society, the science of definite localization by means of the X-ray has become approximately exact.

I had hoped to include in my paper a discussion of the epochal progress of roentgenotherapy, but the subject is so large and of such great importance that I feel that its discussion should be considered separately in another paper at some future date, but I venture to predict that within the next few years roentgenotherapy will have established itself as one of the most important therapeutic agencies at our disposal, especially in the treatment of malignancies and, furthermore, that even the use of radium will hold a secondary position to roentgenotherapy.

ACUTE INFECTIVE OSTEOMYELITIS WITH REPORT OF CASES.*

By M. J. PAYNE, M. D., F. A. C. S., Staunton, Va.

Acute infective osteomyelitis, acute pyogenic osteomyelitis, acute pyogenic periosteomyelitis, is an acute inflammation of the medullary substance of the bone due to pyogenic organisms. This is not a new disease, but some of our ideas of the disease and the treatment of the disease need to be made more clear. A better understanding of the early diagnosis of this disease is imperative.

The term, acute epiphysitis is sometimes incorrectly applied to the process, and, as will be presently understood, is not only incorrect terminology but does not correctly designate the part of the bone involved in the disease.

A more careful study of this subject demands a brief review of the anatomy and embryology of the parts.

In the development of bone the plates of the spongy bone are developed about the blood vessels. The bone lamellae and the lime salts are deposited about the blood vessels. The various layers of lime salts are concentrically arranged about the blood vessels, which lie centrally. The bone marrow which invests the blood vessels is covered by a highly vascular membrane called the medullary membrane. Extending from the medullary cavity through the compact bone to the periosteum are numerous openings, all of which contain blood vessels and structure identical with the medullary substance of the bone. This may be demonstrated by reflecting the normal periosteum from off the bone when numbers of bleeding points may be observed. The blood vessels are accompanied by lymph spaces, known as the perivascular lymph spaces or channels. (Though of great

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

importance, time does not allow me to touch upon all the functions of the structures under consideration.)

The spaces of the spongy bone are filled by the derivatives of the mesenchyma, i. e., reticular tissue, blood vessels, fat cells and developing blood cells. Together these constitute the red bone marrow. Near the middle of the larger long bones we find the bone marrow less red, and here it is spoken of as yellow bone marrow. In the yellow bone marrow, fat predominates (96%), and gives rise to the peculiar and distinctive yellow color.

At the ends of large long bone the structure is notably different, for here cancellated bone is found and this characteristic persists during life. The periosteum is found to present two layers, first, the osteogenetic, next to the bone, and second, the outer layer which is intimately attached to and blends with the epiphyseal cartilages. The division of the periosteum into layers occurs at the juxta-epiphyseal line. You will, now, observe that a communication exists between the bone marrow and the periosteum at the ends of the long bones.

Bones grow mainly from the diaphyseal ends or near the epiphyseal cartilage, for here we find new tissue, growing tissue, which in the young is exceedingly vascular. This tissue is very easily traumatized. The attachment of the epiphysis to the shaft or body of the bone is not strong, and epiphyseal separation and injury is more frequent than it is thought to be. A slight twist is the most common injury. This should be clearly emphasized in all considerations of spinal injuries, deformities, or diseases of the vertebrae.

I wish you then to conceive of a bone, now, not in the old way, as a mass of lime salts with a few nutrient foramina for the passage of blood vessels intended to supply blood to the bone, but as a highly organized vascular tissue of blood vessels and perivascular lymph spaces, having a perforated outer hard casing with numerous vascular channels extending through the perforations to the periosteum. An avenue of communication also is found in the young between the bone marrow and the periosteum at the ends of growing long bone.

It seems, therefore, incredible that an acute infection could be limited to the medullary cavity or to the cancellous bone or to the periosteum, in view of the free communication that exists between the parts by means of the blood vessels, lymph channels, haversian canals and the juxta-epiphyseal line.

In the young the juxta-epiphyseal area contains growing cellular tissue of much activity, delicate, unstable and complicated, with an equilibrium which is easily disturbed, and a resistance which is often very slight. Hosts of blood vessels yet imperfect in their embryonic structure or development are present in this area. All these blood vessels communicate freely and are unable to expand. The periosteum is very vascular at this age, and is rich in cellular growth. You can now well see, therefore, how in tissue so arranged, an injury, exposure to cold, or an acute exanthema leads to the arrest of the pyogenic organisms which may be present or circulating in the patient's blood. The results of the arrest of the pyogenic bacteria in tisssue as above described are violent inflammation, hemorrhages, thrombosis, pus formation and necrosis of the bone structures, violent inflammation of the overlying soft tissues, attended by most profound evidence of absorption of septic products. Often, however, the inflammatory process is so widespread, (many avenues exist through which the pus may travel), or is so virulent that the clinical symptoms are interrupted by the death of the patient.

The causes may be classed as predisposing and bacterial. The predisposing causes are the acute infectious diseases, malnutrition, lowered general health, from any cause, bad hygienic surroundings, exposure to cold and injuries. A history of an injury is present in at least 50% of all cases. The injury is often trivial and is usually a twist induced by wrestling or falling, e. g., the hammer lock or half Nelson. You will now see the explanation for the frequence of the affection involving the condyles of the humerus, the lower end of the femur and the tibia, for these are the bones that are twisted, and, thereby, injuring the delicate structure at the bone-end.

I wish at this time to impress upon you the need for urging mothers to employ greater care with children in early life, in order to avoid trauma to the delicate bony parts, especially the spine, the humerus, femur, tibia, for I believe slight injuries of the vertebrae occasion an inflammation of the bony part often overlooked, at the time, but later resulting in spinal caries or spinal deformities. This is well worthy of our attention, in order to pre-

vent the minor spinal displacements that are receiving so much attention at this day.

Bacteriologic investigations show that the affection may be due to aerobic or anaerobic bacteria and that the process is not due to any specific organism. A mixed infection is often found, that is, of the specific organism of some disease and the pyogenic bacteria.

The staphylococcus aureus or albus and the streptococcus are the usual pus organisms found. The former is the one more often present. The presence of other organisms has been repeatedly demonstrated as the diplococcus, the bacillus coli, and the tetracoccus. The bacteria gain entrance through a lesion of the skin or mucous membrane, e. g., the respiratory, intestinal or genito-urinary tract. Diseases of the ear, otitis media (without pain) due to the pneumococcus, boils, pimples, skin diphtheria, trivial lesions of the skin and glandular involvements and infections of lungs, prostate, tonsils, etc., may be the focus of infection.

The disease usually commences in or near the end of the shaft of long bones and the following changes may be observed in the order named: Hyperaemia, oedema, softening and change in color of the bone marrow. Supuration rapidly ensues and the marrow is streaked, mottled with gray, and abscesses large or small form. The inflammatory area may be distinctly localized or in the malignant cases the entire medullary cavity may become rapidly involved. The disease is not limited to the medullary cavity but extends through the haversian canals and rapidly involves the tissues of the limb. The tendency to spread is more marked outwardly through the haversian canals and through the juxta-epiphyseal line than up or down in the medullary cavity.

The periosteum is separated from the bone by the rapid formation of the pus and in consequence the blood supply to the bone is cut off. The intense inflammation blocking the haversian canals further acts to cut off the blood supply to the bone. Rapid softening and destruction of the bone ensues. The destruction may be localized or widespread or affect multiple bones. The bone necrosis is at times so rapid and marked that pathological fracture of the bone occurs before the gravity of the case is recognized.

The joint is never involved primarily, but may be involved secondarily, especially in late cases or after operations in which the epiphysis is invaded by the operative procedure. The firm attachment of the periosteum to the epiphysis acts to safeguard the extension to the joint.

Acute osteomyelitis may be diagnosed in the first eight to twenty-four hours. The onset is sudden, abrupt and pronounced. Pain is the earliest symptom and is acute, boring aching of exceedingly severe nature. Following the pain we have evidences of absorption of septic products, that is chill, fever, weak rapid pulse, as is usually found in septic manifestations. Early, the local signs are marked tenderness near the junction of the shaft with the epiphysis. The joint and the epiphysis are not involved. Deep pressure elicits tenderness in the very earliest stages and increases the pain. Slight oedema is present. Loss of function is complete. Later the soft tissues overlying the affected part become tender, swollen, discolored, oedematous and finally necrotic. Effusion into the neighboring joints is quite frequent. The X-ray will disclose destruction or production. The actual destructive or productive process occurs late in the disease. Early negative X-ray findings therefore do not preclude the existence of an active infection. *The early symptoms then are essentially those of an acute infection or sepsis with the addition of local point tenderness.* The child is strikingly sick. Dilation of the superficial veins, separation of the epiphysis, spontaneous fracture, perforation of the joint and capillary stasis are all "end symptoms" and should be so classed and excluded from the symptomatology of the disease. The urine will often be found to contain albumen. The blood examination will show the red blood cells and hemoglobin, somewhat lower than normal with marked increase of white blood corpuscles and an increase in polymorphonuclear leucocytes. A blood culture will often show a rapid growth of some pyogenic organism.

Differential Diagnosis. The diseases with which acute osteomyelities are often confused are typhoid fever, acute articular rheumatism, meningitis, erysipelas, or phlegmonous inflammation of the soft parts and periostitis. The onset in typhoid is slow; in acute osteomyelitis the onset is abrupt. The white blood cells in typhoid are reduced in number, and the increase is marked in osteomyelitis, and is often high. The Widal re-

action occurs in typhoid late but blood culture may be positive early in typhoid. Osteomyelitis may be confused with meningitis when delirium and stupor exist. These should not confuse the careful diagnostician. Acute articular rheumatism probably is more often confused with osteomyelitis than any other disease. The pain in rheumatism is distinctly articular and usually affects more than one joint. The general symptoms are less severe in rheumatism. Violent inflammation of the soft parts and periostitis may prove confusing and at times misleading. The treatment, however, in these cases is essentially the same as in osteomyelitis.

Prognosis. This is an emergency of a greater gravity than an acute abdomen. The early diagnosis and early treatment of this disease are attended by good results. The results in cases properly treated within 24 hours of onset will show a mortality of not more than 10%, while cases operated upon later will show a mortality of from 30% to 100%. As an emergency these cases take precedence in the better hospitals.

Treatment.—Early incision of the soft parts and of the bone extended through to the medullary cavity with removal of foci, disinfection of the parts and drainage, without any attempt at immediate closure of the wound. No operation is complete without opening the medullary cavity. The various structures should be carefully observed and noted in the operative report. It is advisable to reduce the time of the operation to the minimum and to have "a light ether anaesthesia." Following the operation supportive treatment should be employed and the use of autogenous vaccines may be of value. The Carrel-Dakin treatment may be employed.

Early operations will save many lives. Early operations will save extensive removal of bone marrow. Early operations will save bone destruction and consequent deformity.

The faulty or impaired regeneration of the bone following osteomyelitis, either with or without operation, may result in crippling, future deformities and serious functional results.

Case Reports.

The first case occurred in a school girl, aged seven, with a negative family history, who was admitted to the hospital January 24, 1922, complaining of pain in the right leg. About November 2, 1921, the patient received one thousand units of antidiphtheritic serum, and developed diarrhea on November 17, 1921. There was no history of injury.

Beginning November 13, 1921, the child complained of a stiff ankle, and developed severe dull pain, especially at night, fever, chills, and sweats, gradually increasing in severity. Physical examination at that time showed a temperature of 104, the right leg markedly swollen and very tender, the great toe joint red and edematous. X-ray examination showed no bone pathology. Two or three days after this, we opened an abscess on the great toe, and about ten days later removed a loose phalanx, after which the wound promptly healed. Within three or four days we opened three abscesses on the leg, and a particle of bone was later discharged through a sinus.

X-ray examination, January 24, 1922, showed an osteomyelitis of the right fibula with destruction and proliferation, the entire shaft up to five c.m. of the upper end being involved. Operation the next day revealed extensive osteomyelitis of the right fibula corresponding in almost perfect detail with the X-ray plates. The patient made an uneventful recovery and was returned to her family physician February 20, 1922.

Laboratory Data.—Urinalysis before operation was negative save for a rare pus and blood cell. Blood count January 24, 1922, showed 13,800 leucocytes with 81 polymorphonuclear leucocytes, and a hemoglobin of 75%. Culture of pus yielded staphylococcus albus, pure culture. Guinea pig inoculation failed to show evidence of tuberculosis.

The second case occurred in a school child, aged nine, admitted to the hospital May 16, 1922. The family history was unimportant. The patient's past history was not unusual except for tonsillitis, until she had an attack of scarlatina, November, 1921, complicated by a cardiac lesion and followed by nervousness and anorexia.

Without previous injury the present illness came on suddenly May 10, 1922, with severe pain in the right hip, nausea and vomiting. Delirium developed May 12, 1922. The body became edematous May 14.

Physical examination on admission to the hospital showed an acutely ill child with jerky respirations and flushed cheeks, exhibiting involuntary movement of the hand. Physical

examination, except for bad tonsils, is unimportant except for extremities. The right limb is seen in a flexed abducted and externally rotated position, and is markedly swollen. There is great pain on movement, and the tissues over the upper thigh are resistant and hard. Attempts to flex the thigh result in marked rigidity. No crepitus is felt on rotation. The right ankle is slightly edematous over the joint, and the patellar reflex was not obtained.

X-ray report suggested osteomyelitis of the upper extremity of the right femur, but was not conclusive. Operation on the day of admission disclosed an area of dead bone, about one and one-half by five centimeters extending downward from the upper end of the great trochanter, and an abscess cavity lying posterior to and below the neck of the femur. The shaft was guttered and all apparent necrotic bone removed. Extensive exploration was not attempted, due to the critical condition of the patient. After the operation the patient exhibited profound shock and died at 9:30 P. M the following day.

Laboratory Data.—Urinalysis showed a trace of albumin and a few pus and blood cells with a rare hyaline cast. Blood count showed a leucocyte count of 9,000, with 85% polymorphonuclear leucocytes and very low hemoglobin. Culture of pus showed a pure growth of staphylococcus albus. Wassermann was negative.

The third patient was a school girl, aged eleven, and a sister of the second patient. She was admitted the day her sister died, May 17, 1922, complaining of pain in the right foot and left shoulder. Past history showed that six years ago the patient got a long thorn in the right heel and complained of her right hip. The leg would "draw" after walking any distance. A year ago the patient was bent to the right side. She is a mouth-breather.

The present illness began May 12, 1922, with severe pain in the right foot, and the child went to bed. The next day she had a high fever, but no other constitutional symptoms. The swelling on the outer side of the ankle was first noticed May 16th.

Physical examination was negative save for cryptic tonsils and the presence of swelling, edema, and induration in the right foot, ankle, and leg, with acute tenderness on pressure. The left lower extremity was negative. X-ray examination, May 17th, revealed an osteomyelitis of the right tibia extending from the epiphyseal line upward as far as the roentgenogram showed. The presence of pus was not visibilized.

Operation May 17th revealed the medullary canal filled with pus and broken down throughout the length of the tibia. The lower epiphysis appeared not to be affected. The operation was attended by profound shock, but the child reacted and became fully conscious. The next day a considerable amount of serous drainage appeared and the child was in an acutely toxic condition, passing away at noon.

Laboratory Data.—Urinalysis on admission showed a large quantity of albumen with 60 casts to a field. Blood count showed a leucocyte count of 28,700, with 91% polymorphonuclear leucocytes, and hemoglobin of 60%. Culture of pus showed a pure growth of staphylococcus aureus.

Discussion.

Dr. R. P. Bell, Staunton: I have not much to say on the paper. Dr. Payne covered practically everything. The importance of early diagnosis should be emphasized. It is very difficult to do sometimes. When you have a baby with a high temperature and unable to say what is wrong, it is exceedingly hard. I had a fatal case the same time Dr. Payne reported his two sisters. My case came in practically moribund, and died on the table. The baby had been sick two days. One other fatality occurred within a week. Both these cases had been treated by good men before coming into my hands. If you have any doubt, it is a good thing to make incision over the bone anyhow, and then if you get to a bone which is apparently healthy, bore a hole. Sometimes the trouble does not show through the periosteum.

Dr. Payne, in closing :In making an early diagnosis try to find the focus of infection, if possible. If you get a tender point, even though the X-ray says nothing, explore it.

SPECULATIONS CONCERNING THE GENESIS OF NEOPLASTIC DISEASES.*

By C. O. MILLER, M. D., New Market, Va.

Lack of time and access to the literature on the subject prevents the writer from making a review of the various speculations as to the cause and genesis of tumors. In the absence of such study he has made use of the latest and the most complete work on the subject which it has been his privilege to consult. No one could have written such a work as Ewing has produced in his second edition of Neoplastic Diseases without a great deal of personal research and a wide acquaintance with the literature along these lines.

*Read before the Medical Association of the Valley of Virginia at its meeting in Clifton Forge, September 28, 1922.

Every age, since the dawn of medicine, has presented its speculations as to the etiology of tumors, which speculations have assisted in advancing our knowledge by showing what was not the cause or by stimulating studies which have helped to clarify our conception of the processes involved.

Speculations as to the cause of cancer may be classified under the following heads:

1. Embryonal (Cohnheim's theory).
2. Cell Autonomy (involving tissue tension).
3. Heredity.
4. Trauma.
5. Parasitic.

As to Cohnheim's theory Ewing says, "While it explains the structure and occurrence of many tumors, wholly fails to reveal why the embryonal cells begin to grow and when growing produce malignant tumors instead of normal structures."

"The theory of cell autonomy introduces the conception of tissue tension, which conception is, perhaps, not proven, but there are many facts in its favor." Much has been said in favor of heredity and trauma as being important factors in tumor formation.

Near the end of Ewing's chapter on the historical review of cancer he says, "It became evident that the parasitic theory which had enjoyed general acceptance must be set aside as an inadequate explanation of the new facts of tumor origin and growth." In his chapter devoted to a review of the speculations as to the parasitic theory he says, "Yet it must be admitted that the growth of the cells is greatly influenced by the environment, and that peculiar external irritants of parasitic origin may greatly stimulate the nutrition and growth of cells. Biology cannot argue the cancer parasite out of existence, but it can demand objective data in its support;" and he sums up by saying, "In view of the considerations thus briefly reviewed it is impossible to regard as a valid hypothesis the conception of a specific group of parasites living in symbiosis with the cancer-cell and stimulating its growth and nutrition. All the facts are reasonably explained by regarding the cancer parasite as the cancer-cell."

After reviewing the subject one does not feel satisfied with its present status as offering a full and complete explanation of the genesis of neoplastic diseases.

Notwithstanding the weight of authority against the parasitic theory of the origin of tumors, the writer will present some speculations in its favor. There have been claims made of finding various parasitic forms as the cause of cancer, among which the mycetozoa have figured.

What are mycetozoa? At one time they were considered to belong to the vegetable kingdom, having affinities to fungi. Later de Bary classified them as belonging to the animal kingdom under the name of mycetozoa. Butschli, while recognizing them as having affinities more related to the animal than to the vegetable kingdom, does not include them among the protozoa.

Let us consider some points in the morphology of mycetozoa as determined from their cultivation. They have usually been cultivated in fluids without any effort to prevent contamination from the air and other sources. The writer's studies have been made from cultures grown in sterilized flasks and fluids, using aseptic methods to prevent contamination. If we start with the spore we find it can be dried, and if to these dried spores we add water the spore wall ruptures, and there creeps out of it a protoplasmic body, designated as a zoospore. It develops a flagellum, and can move through the water by means of the flagellum or, if it adhere to the slide, creeps around very much as an amœba does. These uninuclear bodies are in their amœboid phase a little larger than leucocytes. In the culture they multiply and after a few days some of them encyst. These cysts designated as microcysts have a thicker wall, and are a little larger than the spores. As development proceeds, the microcysts increase in number and with most of them found collected in clumps distributed over the bottom of the flask. In about two or three weeks there are found in and around these clumps small plasmodia, which grow by taking the microcysts into their interior and appropriating the cysts to their own growth. As development advances, the cysts diminish in number. The small plasmodia increase in number and size and fuse with each other to form a large plasmodium. When the proper conditions are present, the plasmodium crawls out of the water to form sporangia, whilst a few varieties very occasionally form sporangia in the water. In the sporangia are found a large

number of spores, thus returning to the point from which we started in this cycle of development. These sporangia are the most characteristic phase in this cycle of development, and from them mycetozoa are classified. The plasmodia of different mycetozoa frequently present distinguishing characteristics, but the differences are not sufficiently great to base a classification upon.

Plasmodia are soft protoplasmic masses which adhere to the surface over which they move, and their form to a certain extent is influenced by the character of the surface. If on a glass slide they spread out in a film or net work, or, as in the case of aethalium septicum growing in a pile of crushed oak (tan) bark, they accommodate themselves to the spaces in the bark, and its form might be visualized as having somewhat the appearance of a sponge, the channels or spaces of the sponge being packed with fragments of the bark instead of being filled with water, and the material of the sponge representing the soft plasmodium.

The protoplasm of plasmodia is soft and in appearance not unlike that of an amoeba. At times one can recognize an external layer, the ectoplasm, and a remaining central portion, the entoplasm. In their interior they have many nuclei distributed through the protoplasm; the nuclei differ in size and shape under varying conditions and in plasmodia of different varieties of mycetozoa. The plasmodia vary in size from several times the size of the zoospores to a mass at least large enough to cover the exterior of an earthenware flower crock holding about one and one-half liters. The term plasmodium is rather confusing in that it has been applied to the parasitic forms found in the blood of persons suffering from malarial infection, and although they are now classified under the head of sporozoa the term plasmodium malariae has not been entirely abandoned. In this communication the term plasmodium represents the multinuclear plasmodial mass, a prominent phase in the development of mycetozoa. In the cancer-cell has been described inclusions which have been interpreted to be stages in the life cycle of mycetozoa. This claim has been combated, and at present is discredited. The writer has not certainly seen these bodies, and he has no speculation to offer as to their presence or significance should they exist. The speculations he has to offer are based on the hypothesis that there are true plasmodia in a cancer. If there are, why has no one ever seen and described them? So far as the writer knows no one has described true plasmodia as being present in the cells or tissue of a plant or animal. They may take from the cells spores which will develop into plasmodia, and they interpret the mass of spores in the cells as having come from a plasmodium. However, the writer must admit that he has not had an opportunity of reading the original articles on clubroot of cabbage.

It is recognized that the cancerous mass is made up of elements which are derived from the human body, and a distinguishing characteristic is that these elements are atypical in their relation to each other, in their numbers or quantity, as well as in the appearance and functions of each individual element. Since it is recognized that the elements of cancer derived from the human body are atypical, then we are prepared to admit the probability of the plasmodia also being atypical; that is, they would not grow and spread out as they do on a glass slide. Not deriving their food from the same source and living under different conditions, their growth and steps in development might not be just the same as in a culture. So far as the writer's studies go he has not seen a microcyst or active zoospore in a fixed stained specimen or in fresh material.

The studies of cancer have all been made on a cancer developed and not on a cancer beginning so we have no positive knowledge as to the beginning of a cancer. In assuming that plasmodia may be found in a mammary cancer we may speculate as to its beginning growth. We do not know whether a single zoospore in the amoeboid stage or a small plasmodium having only several nuclei made its way along the milk ducts or whether it was carried along the blood current to the neighborhood of an acinus where it lodged. Try to visualize what would take place. The plasmodium has a local habitat and it does not hesitate to appropriate to itself nourishment from its surroundings. Is it going to be content to suck up some of the fluid in its neighborhood, or will it be more ambitious and have designs on more tempting and substantial morsels? In the cultures it appropriates to its own use the microcysts; why not try the experiment of isolating and engulfing a cell; or since under favorable surroundings in na-

ture it can even engulf a ciliatum, why not try the experiment of isolating an acinus and appropriating by one effort a number of cells? In its effort to isolate the cells the plasmodium must of necessity come in contact with the nerve plexus surrounding the acinus and supplying the cells with their enervation. The nerves resent this intrusion, they send off a hurry call for assistance. Does that assistance arrive by way of the blood vessel pouring out its serum? Serum is what the plasmodium lives in. Is the situation attractive enough for the leucocytes to enter the contest? If they do, is the plasmodium able to appropriate some of them to itself for its growth? But the blood alone is not able to stop the invasion. In fact, the plasmodium may be so pleased with what the blood vessels supply that it surrounds the terminal vessels in order that its supply of serum may be assured. Another call goes out for help, this time to the connective tissue. Here is a foe worthy of the contest, but it is slow in building up obstruction to limit the field of operation of the invader. In the meantime, the plasmodium has been growing in power and cunning. It discovers the lymph channels. Here the road is unobstructed for a time, and in these channels it finds side channels which also bring fluid so necessary to its subsistence.

Another factor presents itself. What of the epithelial cells taken up by the plasmodium? They have been separated from their surroundings. They are still at the same temperature. They are imbedded in a protoplasm which takes serum and material from the same source from which the cells have been receiving their supply. It may be true that there are slight alterations in the composition of the plasma, but these alterations may not be so great but that the cells can still live in the interior of the plasmodium. The plasmodium begins to take a paternalistic interest in its guests, for it finds out that the pressure from the increased and constricting connective tissue becomes unpleasant and that the pressure from within due to multiplying cells counterbalances the pressure from without. If at any time the food supply of the plasmodium becomes limited, a few of the guests can be appropriated to supply the deficiency.

The epithelial cells being released from the controlling and restraining influences of the nervous system, and in this respect having returned to their earlier embryonic condition, start on an orgy of proliferation, and give as a result monsters in the shape of cancer-cells. Perhaps after a time, when there has been little advance made, a concussion from without tears a rent in the obstructing connective tissue, and the plasmodium discovering lymph spaces, not compressed, rapidly advances along the lymph channels until it reaches a lymph gland, having carried some of its guests along. Thus we have a metastasis but not a beginning cancer. We might suppose that a fragment of the plasmodium with some of the epithelioid cells is separated from the plasmodium and carried along by the lymph current to the lymph glands, or they might pass beyond the lymph glands into the thoracic duct, and from there into the blood current, and by it be carried to a distant part of the body where it lodges and produces a metastatic growth.

Thus we would have a double parasitism; on the one hand, the plasmodium within the tissues of the animal body; and, on the other hand, the epithelioid (cancer) cells within the plasmodium. We might picture to ourselves the plasmodium withdrawing from a given area entirely, or leaving remains resembling in some respects the hypothalus or capilitium of plasmodia. If the cancer-cells were expelled from, or were abandoned by the plasmodium, would they have under the changed conditions vitality enough to continue to proliferate, or would they die and be represented by cells in various stages of degeneration?

The question may very properly be asked, Why has no one ever described such a parasite? Has any one looked for it? How large would it be? Any where from a small protoplasmic mass several times larger than a leucocyte containing several nuclei to a many nucleated protoplasmic mass coinciding in size with the area of cancerous invasion. We would visualize such a parasite in the earlier stages as containing a few apparently normal or very slightly changed epithelial cells included within the small plasmodium which would be represented by a thin film of more or less hyaline protoplasm on the periphery, within which might be seen a small quantity of fine granular or fibrillated protoplasm with several small round or oval nuclei, probably near the surface of the composite body.

It is not uncommon to see in one of the smaller protoplasmic branches of the cultivated plasmodium a microcyst filling up the

branch and only the very thin outer layer of hyaline protoplasm holding the microcyst in place. If we had a section transverse to the branch of such a plasmodium at the point of the included microcyst, and we could look down on the cut end of the branch we would see a microcyst enclosed in the transversely cut, thin, hyaline layer of protoplasm which if improperly interpreted we might consider to be the outer layer of the capsule of the microcyst. Again, we find in cultivated plasmodia larger branches that are crowded by a number of microcysts in different phases of digestion or degeneration, and we cannot make out any of the structure of the plasmodium except by following the contour of the branch from each end of the collection of microcysts.

If the plasmodium were coincident in size with that of the cancerous process, it would be impossible to see it with a microscope, or, in order that it might be studied macroscopically, to separate it from the structures it permeates. At best we could with a microscope only see a small part of a plasmodium as found in a tumor large enough to be certainly diagnosed as cancer. If we saw such a fraction of a plasmodium in a stained specimen cut thin, we would only see here and there a few small nuclei stained by nuclear stains just as the other cells derived from the human body are stained. Suppose we were fortunate enough to cut a lymph channel in half parallel to its long axis in which was an advancing plasmodium, and could look down upon the cut surface, we would see a string of epithelioid cells. On each side of it the connective tissue would be seen and between the string of cells and tissue a thin, almost hyaline layer or septum which can, by focusing, be followed around and under the string of cells forming a sheath for it. As we follow it around, we find on or near the bottom a few, small, scattered round nuclei stained with the same nuclear stain used to stain the tissues. It would not be at all difficult to overlook these nuclei or, if seen, to consider them as belonging to the tissues instead of interpreting them as nuclei belonging to a plasmodium which envelops the string of cells.

If we had such a parasitic form in cancer, how would we proceed to demonstrate a genetic relation to the disease? First, by demonstrating it in a living condition in the cancerous material; second, in demonstrating its presence in fixed specimens; third, by cultivating it outside of the human body, demonstrating a particular variety to be associated with a definite tumor; fourth by inoculating an animal and producing a like disease; fifth, cultivating from the diseased area of the inoculated animal the same variety of plasmodium. These conditions can only be met by having the time, opportunities, and material to employ in the investigation and to work from the proper view point.

What is the use of presenting these speculations? Having studied protozoa and mycetozoa under Professor Butschli, the writer published some of the results of his cultivation of mycetozoa,* and he feels that he has had practical experience sufficient to enable him to recognize an active plasmodium when he sees it, and his studies of preparations of fixed and stained plasmodia from cultures give him some insight as to what one would expect a plasmodium to look like if it were present in a cancer. He has recently studied a limited number of fresh specimens of malignant and benign tumors, as well as a number of stained sections of tumors, and is much encouraged to believe that a sufficient number of the five conditions mentioned above can be met to prove that neoplastic diseases have a definite parasitic origin.

If positive conclusions from his cultural studies can be drawn, we must conclude that benign as well as malignant neoplasia have a parasitic origin. The differences in tumors can be explained by the characteristics of special plasmodia, together with the different reactions of special tissues to the presence of the plasmodia as found in benign and malignant tumors.

There is much more that could be said on the subject, as the work is by no means completed, so that this communication must be considered as unfinished, and from its nature only a preliminary report, thus adding a few more to the numerous speculations on record as to the genesis of neoplastic diseases.

*The Quarterly Journal of Microscopical Science, No. 161, page 43—March, 1898.

REMARKS ON PERINEAL LACERATIONS.*

By W. DENNIS KENDIG, M. D., Kenbridge, Va.

The problem of perineal lacerations is as

*Read before the Southside Virginia Medical Association, at Victoria, September 12, 1922.

old as the human race. The literature on this subject is so extensive that an apology might appear necessary for its introduction, yet the advantages of an early repair of this condition, as a rule, in every case have not been fully recognized until recently. In this paper I simply desire to refresh our memory on this subject, call attention to the advantages of an early repair, and discuss the necessity of handling every torn perineum according to the surrounding circumstances of each case. The vast number of cases of lacerated perinei, which have not been repaired and the many cases of lacerated perinei which have been repaired without results, seen every day in the practice of medicine and surgery, bear evidence of the fact, that the last word has not been said on this subject. It has been discussed so much, and its bad effects are so well known, that not only the physicians; but even the laity have been educated as to the deleterious effects produced on the general health of women who are victims of the unrepaired perineum. Every physician doing obstetrical practice today should be prepared and equipped to take care of perineal lacerations.

According to different authors perineal tears occur, varying in frequency from 10 to 45 per cent, and with forceps deliveries showing as high as 85 per cent. Dr. Henry A. Bernstein, of New York, says that, from an investigation of the subject and from a service comprising a very large number of obstetrical cases, he is convinced that fully 75 per cent of the women that have undergone immediate suturing of the vaginal orifice, are later in need of a secondary operation, and that further, in view of the fact that much more than 50 per cent of all primiparae are lacerated at the time of confinement, it is safe to say that something is wrong with the general technique employed. In view of these facts a further study of the cause and repair of this deplorable condition should be beneficial.

The first and most important, and I think the key to this problem of repair, is the proper knowledge of the anatomy of the perineum. The perineum has a central point where converge the external sphincter ani muscle from behind, the superficial transverse perinei from each side, and the bulbo cavernosus from the front. The ischio cavernosus muscle lies along the edges of the pubis. These constitute what are called the superficial muscles, and are reinforced by the deep transverse perinei and the levator ani muscle. The levator ani is lined on its upper or visceral side by the recto vesical fascia, and is covered on its under surface by the ischiorectal or anal fascia. In repair of the perineum, it is as important to engage these fasciae as it is to engage the muscle for, if not backed up by the fascia, to give periods of rest, the muscle would tire out and become relaxed. The muscle of the greatest importance is the levator ani, for it not only supports the rectum, but the tendinous center of the perineum, the lower end of the vagina, and indirectly helps in the support of the uterus and bladder. The levator ani is said by DeLee to be always injured in labor, either torn, over-stretched, or to have small tears not noticeable until afterwards by relaxation of the pelvic floor. Practically all the muscles that form the perineum or are inserted into the central point of this organ arise directly or indirectly, in front from the pubis, on the side from the ischium, and behind from the sacrum, or coccyx, so it can readily be seen that when there is a tear of the perineum, contractions take place in every direction away from the point of laceration, producing a gaping of the parts. This gaping or contraction in every direction accounts for the fact that no lacerated perineum ever can be entirely restored to its original condition with the repair of the muscles. The earlier it is done, the more nearly the original condition is restored; however, it should be the duty of every physican when he finds an old unrepaired tear to use every argument to induce the patient to have an operation performed at once.

Primary operation is indicated in all cases of perineal lacerations except in eclampsia, post partum hemorrhage, great prostration or extreme weakness, infection of any kind, and devitalized tissue from long pressure. Early repair has many advantages, namely, time, money and worry is saved to the patient, the danger of infection is less, the torn tissues are more easily and better approximated, and no preliminary preparation is required. If you wait to repair the perineum later, the muscles retract and atrophy and then your results will not be as good. The bad lacerations such as those involving the rectum, bladder, or urethra should always be removed to the hospital at

once, as lacerations of this magnitude become major operations, and require the proper equipment and skill to perform them.

The causation and prophylactic treatment of tears, of course, are very important, but time will not allow their discussion in this paper.

At this point I wish very briefly to describe the technique of the operation. There are dozens of operations devised, but anatomically there is only one, and that is approximating the torn tissue, which will shorten the pelvic sling, and in this way obtain a strong buttress, against which pelvic pressure is exerted. The operation may be approached in different ways by different operators but it matters little so long as you have the basic principle in mind and obtain results. A review of the literature on this subject shows the fact that very few authors advise any exact operation, but they seem to think that a few sutures more or less deeply placed will serve the purpose. It is self evident that this practice cannot give uniformly good results, for the torn surfaces above or behind in the vagina may not be approximated, etc. If in the home, do not attempt repair with patient in bed; but try to get a table, if possible; usually a kitchen table is very satisfactory. Should this not be practicable, put the patient across the bed with the buttock well over the edge, and the feet in two chairs or the thighs held up by means of a sheet or straps, designed for this purpose, from the shoulder. Render as aseptic as possible the field of operation and surrounding parts. Pack the vagina with large gauze sponge, pushed well up into the posterior fornix to prevent the blood from uterus obscuring the field of operation. As in secondary operation, with the application of two tenacula, the different parts are brought into correct position before starting, so that we can get some idea of the rent and what is best to be done. This also can be done by placing the hand on either side of the external parts, and pushing the torn surface together. Now the muco-cutaneous edges of the wound are caught on each side, where it enters the vagina, with two Allis forceps, or can use a guide or traction suture. With the forceps or sutures, the wound can be held open for inspection. At this time the whole birth canal should be examined and, should other rents be found, repaired if necessary. With the labia widely separated, using a retractor held by an assistant from above if necessary, the wound is thoroughly cleansed, bleeding points caught up, and frayed or irregular edges smoothly trimmed, so as to bring the torn structures as near as possible into their normal anatomic relation. The muscles are brought together with twenty day, cat gut sutures. Always begin at the upper margin, and use three to six of these sutures according to requirements of the case. The needle is plunged into the muscle, entering just under the mucous membrane or skin, curving outwards towards the ischium and passing deeply at the side and bottom of wound, until the point of the needle approaches the rectum. Here the suture is passd very superficially over the rectum, and is continued in end of muscles on opposite side in the same manner. Where the parts over the rectum are very thin, have assistant insert the finger into the bowel. In this way the retracted tissue is lifted up, and perforation into the rectum avoided. The method should be used that seems to get the best apposition of the deep muscles, especially the levator ani. In case of tears of sulci they should be repaired the same way. For repair of tear in the edges of the vaginal mucous membrane, use a continuous 20 day chromic cat gut suture, beginning at the back or posterior side, place close together, and draw tightly to prevent seepage into the wound. The skin is then sutured in the same manner. If you think there is need of additional support externally, or there is a danger of the cat gut absorbing too soon, you can first put in several deep sutures of silk worm gut, which are tied after all the other sutures are put in. In case of complete tear, the rectum should be repaired first. In this case the rectal mucous membrane is approximated by a continuous small twenty day gut, beginning at the top. The needle is introduced and issues on the wounded surface of the rectum leaving out the mucous coat, and in this way does not pass into the gut. The torn ends of the sphincter muscle are then brought out of the wound or sphincter pit by use of the finger and forceps. The end of the muscle can as a usual thing be found easily by a small depression or pit. To get a good result introduce two sutures well to each side of the sphincter muscle and one in the middle. This is done in order to insure broad apposition. At least one of these sutures should unite the fascia. Some authorities use a deep stitch of silk worm gut to reinforce this, passing in from the skin surface. In case of infection,

better results would probably be gotten by using this suture. The perineal operation is now completed as above.

In complete laceration, a rectal tube should be inserted three or four inches up into the rectum, keeping it there about five days. The bowels, of course, should not be moved in this time, and the parts kept as clean as possible. The knees should be kept together and, to make sure, a bandage put around them if needed.

All obstetrical patients, if practicable, should be examined sixty days following delivery to see the results of a laceration, whether repaired or not, and, if no laceration was in evidence, to ascertain if there occurred a submucous tear or a general relaxation due to over-stretching of the parts. These mucous tears present practically the same sequelae as the lacerated perineum and occur many times without any tear of the skin or mucous membrane. They demand the same operative correction as the open tear, for the skin or mucous membrane alone will give very little support.

In this short paper I wish to drive home the point that all operable perineal lacerations should be repaired and repaired within a few hours after delivery. I fully realize that the repair of the torn perineum at home is in many cases fraught with difficulties; I realize that often there are few or no assistants of any kind; I realize that the aseptic conditions are not always what they should be; I realize that the lights in many rooms are not good enough for satisfactory work; and I realize that these and many other things are not conducive to the best results in perineal repair at home. Yet, with the resourcefulness which is acquired by every general practitioner, most of these handicaps can be successfully overcome. I think that a hospital offers the best conditions for success in these cases and every case of severe or moderately severe laceration should be carried there immediately for repair, if a hospital is convenient; but I further believe that every case of perineal laceration, not convenient to a hospital, should, unless contra-indicated by the condition of the patient, be immediately repaired at home. I have no new or special forms of technique to offer, I have no new methods of handling the patient, but I have an abiding conviction, born from experience and a study of this problem, that a careful deliberate, intelligent and thorough repair within a few hours after delivery will help reduce the number of women whose health is impaired by an injured perineum.

References

Boys, C. E., The Complete Muscle Operation in Primary and Second Perineorrhaphy Immediately Following Labor. Jour. Mich. State Med. Soc., 1919, xviii, 153.

Wright, R. A., Prevention of Perineal Lacerations and Their Immediate Repair. Clinique, xxxix, 521.

Goldspohn, A., Repair of Partial and Complete Lacerations of Perineum. Surg. Gynec. and Obstet., May, 1921.

Imbert, L., New Operation for Complete Tear of Perineum. Amer. Jour. Surg., Sept., 1920.

Bernstein, Henry A., The Immediate Operation for Perineal Lacerations, Jour. A. M. A., April 27, 1918, page 1217.

Boyd, G. M. Complete Lacerations of Perineum. Amer. Jour. Obstet., Sept., 1918.

DeLee, Joseph. Principles and Practice of Obstetrics.

Mosher, Geo. Clarke, The Ideal Obstetrician. Southern Med. Jour., Jan., 1922, Page 38.

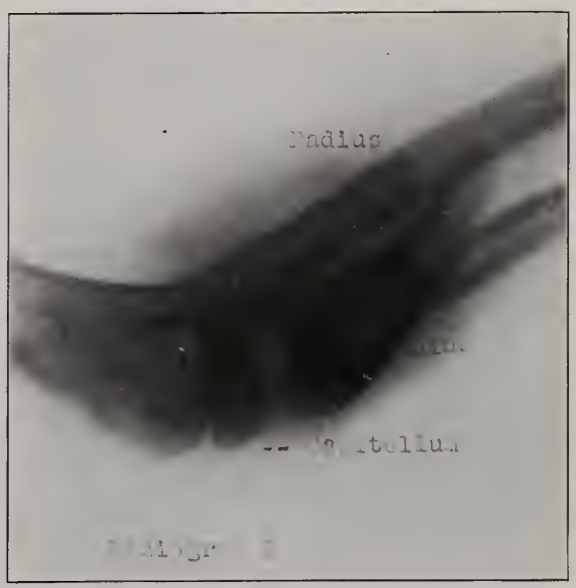
Porter, W. D., A Method of Placing Sutures in Immediate Repair of the Perineum. Amer. Jour. Obstet., 1919, lxxx, 701.

COMPOUND FRACTURE OF THE ELBOW JOINT.

A Case Report.*

By CHAS. M. HAZEN, M. D., Richmond, Va.

History. A girl, aged seven, three weeks ago fell from hammock. After three days, the mother called Dr. Bennett, who found a fracture at the elbow and a wound from either a sharp article externally or a bone fragment.



Radiograms. I. Obliquely lateral—showed 1. Dislocation of olecranon inward and downward;

*Read before the Richmond Academy of Medicine and Surgery September 12, 1922.

2. Fracture of shaft of ulna and sharp fragment tilted forward;

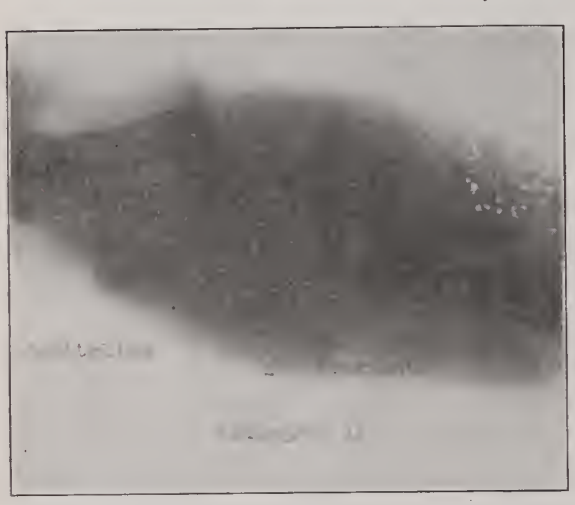
3. Separation of external condylar epiphysis of humerus;

4. Dislocation of head of radius inward and forward.

II. Antero-posterior, partial pronation—

1. Dislocation of olecranon;

2. Fracture of shaft of ulna about junction



of middle and upper thirds;

3. Dislocation of head of radius;

4. Separation of radial head of humerus (=capitellum = external condylar epiphysis).

5. Dislocation of fragment, which is either the external epicondyle of humerus or belongs to head of radius; if the latter, it is rotated.

Mechanism. The dislocations from the humerus are due to either direct traumatism to the elbow, or to indirectly applied force by falling on the hand and fore-arm. The forward position of the ulnar fragment results from the pull of the brachialis anticus; there is probably some rotation from action of the pronator radii teres and supinators. These malpositions imply injury to the ligaments—the orbicular, anterior and external lateral, and to the synovia.

Treatment. Mechanism of reduction (under chloroform):

1. Forearm extended, reducing the ulna dislocation and fracture.

Splints applied anteriorly and posteriorly to forearm between pronation and supination.

2. Flexion of elbow, bringing triceps to bear on fragments to complete reduction of humerus and radius: fibres of the damaged ligaments are thus pulled and help to pull bone-elements into place. Position is maintained by circular adhesive strips.

Radiograms. III. Very obliquely lateral.

1. Dislocation of olecranon reduced;

2. Fracture of shaft of ulna reduced;

3. Dislocation of radius reduced.

IV. Anterior-posterior, flexion.

1. Dislocation of olecranon reduced;

2. Fracture of shaft of ulna reduced;

3. Dislocation of radius reduced;

4. Radial head of humerus in place;

5. Fragment in place—either external epicondyle, or from head of radius.

6. Internal epicondyle in place.

Prognosis. There is a possibility of inflammation from compound injury; a chance of stiffness from involvement of synovia; a possibility of limited function from failure of the bones to unite in their present favorable position; a possibility that circulation and nerve-supply have been damaged, or that nerves may be caught in callus.

Result. After two and one-half weeks, there is partial function in every direction —flexion, extension, pronation, supination. The indications are for continued rest without splints, massage and passive motion carefully performed.

Fifth and Franklin Streets.

THE TOXICITY OF APINOL.*

By CHAS C. HASKELL, W. R. GARDNER, and S. P. HILEMAN, Richmond, Va.

The poisonous action of certain of the older germicides, such as mercuric chloride and phenol, has given rise to a considerable number of fatal cases of accidental poisoning. The danger is now so well recognized that these substances are never dispensed except in distinctive containers bearing the poison label. It is well known also by physicians that the local application of strong solutions of mercuric chloride or phenol may result in systemic poisoning. In view of this undesirable feature of the older agents, it is indeed desirable that an efficient, non-toxic germicide be discovered.

Several years ago, we became interested in the properties of a preparation marketed under the name of "Apinol." According to the report of the chemist employed by the manufacturers, Apinol consists largely of a terpene, laevomenthone. A request for detailed information from the manufacturers was answered to the effect that they were no longer sending out literature bearing on the product.

According to the labels on the bottles, Apinol may be used undiluted as an application to cuts, burns, bruises, lacerations, abrasions, and old sores, "except in cases of very tender skins, when it may be diluted with albolene or any neutral oil." Its internal administration also is recommended as follows: "From three to seven drops on a lump of sugar every two or three hours, will relieve or cure a bronchial cough." The label states that it has other uses; with these, we are not at present concerned. There is nothing on the containers which would suggest that the preparation possesses any toxicity for human beings; though it is said to be unsuited for use on cats.

Apinol is listed in New and Non-official Remedies, but no additional information appears in this publication. A search of the literature reveals only one clinical report of its use; this appearing in a paper by Harris. (*Internat. Jour. of Surgery*, Dec. 1911.) The preparation is used extensively in this locality, especially in the treatment of burns; cases having been called to our attention where it was applied, diluted with an equal amount of petrolatum, to large surfaces of the body. It is a well known fact that oil of turpentine, formerly so widely used by the laity, is by no means devoid of toxicity; and, since Apinol and oil of turpentine may be said to possess a certain similarity, it seemed desirable to ascertain if the former were likewise poisonous.

Experiments were carried out first by injecting Apinol intravenously into dogs. For these tests, small dogs were selected and the injections made into the ear vein, with one exception. For purposes of comparison, similar experiments were made with the official liquefied phenol.

Moderate doses of Apinol, 0.1 c.c. per kilogram body weight, injected into the ear vein of a dog, soon cause marked evidence of depression of the central nervous system; incoordination, resembling that following alcohol, making its appearance. The animal apparently suffers no pain and shows no fear, but walks with a staggering gait, frequently falling over. The pronounced effects usually persist one or two hours, but there is some evidence of depression at the end of twenty-four hours. If the dose be increased to 0.15 c.c. per kilogram, there is immediate appearance of severe pain manifested by the dog; it cries out loudly and then falls over in a convulsion. When death occurs, it is due to respiratory failure, the heart continuing to beat for several minutes. The following protocol illustrates the train of events following the intravenous injection of a dose of 0.2 c.c. Apinol per kilogram.

January 26, 1921.—Female fox terrier; wt. 3.8 Kgm.

*From the Laboratory of Pharmacology, Medical College of Va., Richmond.

4:27 P. M.—0.2 c.c. Apinol per Kgm. injected into ear vein. In five seconds following the injection, the animal cries out and starts to run blindly; falls over in convulsion.

4:30—Respiration ceases.

4:32—Heart beat no longer palpable.

In order to determine the minimal lethal dose intravenously for dogs, seven animals were used; the injection being made into the ear vein in six, as has been previously intimated. The results of these experiments are given in Table 1.

TABLE 1.
Apinol Intravenously into Dogs.

Wt. in Kgm.	Dose in Cc. per Kgm.	Result.
5.8	0.10	Recovered.
3.93	0.15	Recovered.
3.52	0.15	Death in 2 minutes.
5.8	0.20	Death in 3 minutes.
4.09	0.20	Death after several hours.
3.8	0.20	Death in 5 minutes.
4.2	0.20	Death in 3 minutes.

The results of the injection of the liquefied phenol, which, as has been mentioned, were made for purposes of camparison, appear in Table 2. Eight animals were used and the injections made into the ear vein in all cases.

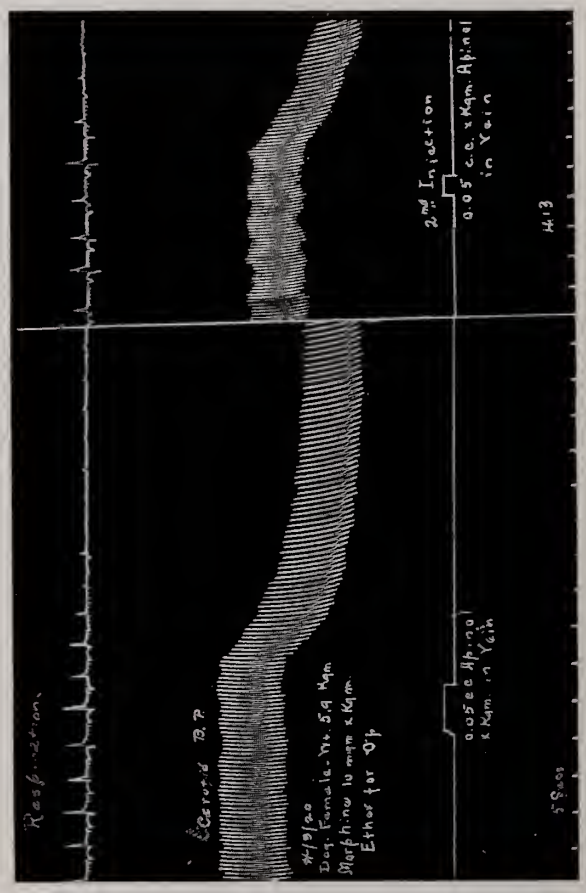
TABLE 2.
Phenol Intravenously into Dogs.

Wt. in Kgm.	Dose in Cc. per Kgm.	Result.
4.4	0.050	Recovered.
5.11	0.100	Recovered.
6.9	0.125	Recovered.
4.68	0.125	Recovered.
9.85	0.125	Recovered.
6.81	0.125	Death in 6 minutes.
5.39	0.150	Death in 3 minutes.
7.15	0.150	Death in 20 minutes.

From the figures given in these two tables, it may be assumed that the minimal lethal dose of Apinol is about 0.175 c.c. per kilogram: while that of the official liquefied phenol is slightly lower, being about 0.135 c.c. per kilogram. It is evident, therefore, that after Apinol has entered the circulation its toxicity is not far from that of liquefied phenol.

From the experiments on these intact animals, the impression was gotten that death was due to a depression of the respiratory center. This was verified by obtaining simultaneous records of the blood-pressure and respiration of anesthetized dogs. In addition to the temporary stoppage of respiration produced by the intravenous injection of a dose of Apinol amounting to 0.05 c.c. per kilogram, there resulted also a decided fall in the blood-pressure, accompanied by a slowing of the heart beat. These points are illustrated by Tracing 1.

The fall in blood-pressure may be due either to a vascular or a cardiac action of the drug; in order to determine this, simultaneous blood-pressure and cardiac tracings were taken; the former by a membrane manometer; the latter by a Cushny myocardiograph. It is evident from Tracing 2 that both a vascular and a car-



diac depression take place after the intravenous injection of 0.05 c.c. of Apinol per kilogram into the vein of a dog; the fall in the blood-pressure occurring before there is a pronounced effect on the heart.

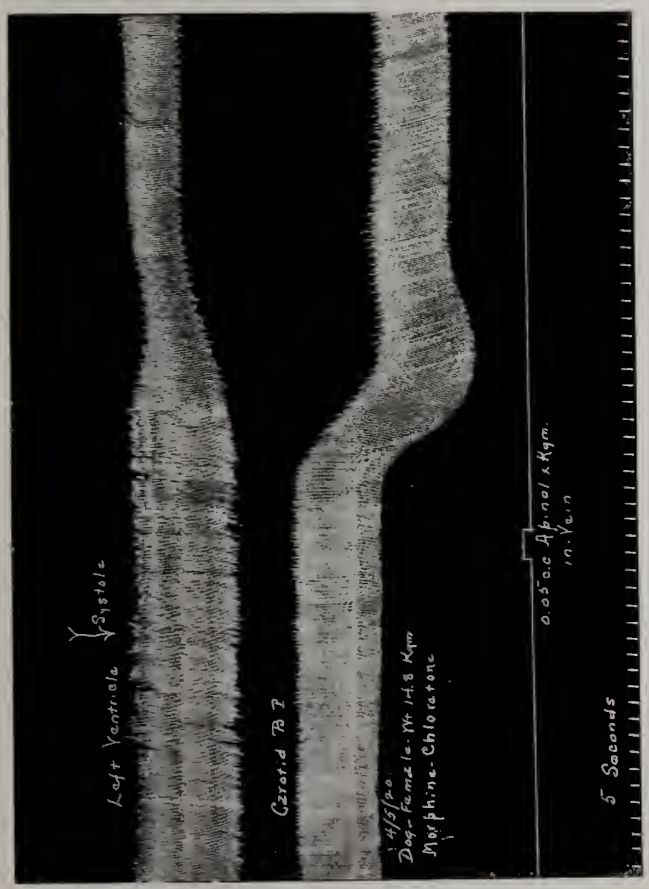
Obviously, the results following the intravenous injection of a drug do not furnish us with a true criterion by which to judge its "clinical" toxicity; because there are many substances which may be safely administered orally or applied locally, but which would produce serious or fatal effects if injected into the vessels. Therefore, experiments were carried out to determine the toxicity of Apinol for

dogs by oral administration. The results of these experiments are given in Table 3.

TABLE 3.
Apinol Orally to Dogs.

Wt. in Kgm.	Dose in Cc. per Kgm.	Result.
8.2	0.50	Recovered.
5.0	0.50	Recovered.
7.7	1.00	Recovered.
9.5	1.00	Recovered.
6.6	1.25	Recovered.
7.9	1.25	Recovered.
2.9	1.50	Recovered.
7.0	1.50	Died.
6.6	1.50	Died.
5.7	1.75	Died.

These animals were all given a preliminary subcutaneous injection of 10 mgm. morphine sulphate per kilogram body weight in order



to prevent emesis, which invariably occurred after the oral administration of the Apinol alone.

In our experience, the dose of 1 c.c. liquefied phenol per kilogram orally is invariably fatal to dogs; it is evident, therefore, that Apinol is somewhat less toxic for these animals by oral administration than is the case with phenol; the fatal dose of the former being at least fifty to seventy-five per cent larger than the latter. Nevertheless, the results indicate that the fatal dose for a person of average size would be less than five ounces; in cases of diseased individuals or small children, the dose would, in all probability, be much less.

To simulate the conditions where Apinol is applied to a denuded surface, as lacerated wounds or burns, the drug was injected subcutaneously into cats. As shown by Table 4, the toxicity of Apinol administered in this way to cats is less than it is orally for dogs. This may be due to a difference in the resistance of the animals or else to slower and more imperfect absorption from the subcutaneous tissues. This latter possibility seems to be rendered the more likely from the fact that in all cases where the site of the injection was cut down upon after the animal's death, there was found a considerable amount of the injected dose unabsorbed.

TABLE 4.
Apinol Subcutaneously to Cats.

Wt. in Kgm.	Dose in Cc. per Kgm.	Result.
2.77	0.25	Recovered.
3.95	0.50	Recovered.
2.95	0.75	Recovered.
4.1	1.50	Recovered.
3.75	1.75	Died.
2.7	2.00	Recovered.
2.6	2.00	Recovered.
2.66	2.00	Recovered.
1.73	2.50	Died.
3.09	2.50	Died.
2.7	2.50	Died.
1.97	2.50	Died.

Autopsy of the animals that succumbed to the poisoning by Apinol revealed as the most conspicuous gross lesion a hemorrhagic condition of the lungs. This was so pronounced in some cases as to lead to almost complete consolidation, even though death had occurred within a few minutes after intravenous injection. Where several hours elapsed before death, the pleural cavities contained several hundred cubic centimeters of fluid blood. In the animals that had received Apinol orally, there was intense congestion of the gastro-intestinal tract, extending throughout its entire length. In some cases, there was considerable bloody mucus in the intestinal lumen. The liver and kidneys showed marked congestion. Dr. S. W. Budd was kind enough to examine sections of the lung, stomach, liver, and kidney microscopically, and made the following report:

"*Lung*: intense congestion, with small

patches of leucocytes scattered in the congested zones.

"*Stomach*: slight coat of bloody mucus. Decided cloudy swelling of mucosal gland cells; and, at opening of glands, there is marked evidence of disintegration of the cells. Muscularis and submucosa not altered.

"*Liver*: intense cloudy swelling; focal necrosis located around branches of the portal vein. Mild congestion everywhere.

"*Kidney*: marked cloudy swelling. Glomerulo-tubular nephritis; very pronounced. Glomeruli very distended. Tubules show a most pronounced cloudy swelling."

We wish to make it clear that we offer no criticism against the clinical use of Apinol. So far as we know, the preparation may have distinct therapeutic indications; but we do believe that physicians should realize that in Apinol they have a substance which approaches liquefied phenol in toxicity; and care should be used in its application to large denuded areas or in its oral administration.

REPORT OF A CASE OF HYDATIDIFORM MOLE.

By J. L. RAWLS, M. D., Norfolk, Va.

In a hydatic mole there is a rapid proliferation of chorionic villi with the formation of small cysts. It is well to remember that a hydatidiform, hydatic or vesicular mole may entirely destroy a pregnancy or may grow in conjunction with it or with a twin pregnancy. In other words, if occurring early in pregnancy, the fetus may be destroyed and the mole develop alone, or, if occurring late in pregnancy, involving only a part of the chorion, a living baby may be delivered or a live twin accompanied by a decidual mole.

McCallum states that during pregnancy there is a curious invasive growth of the chorionic villi into the uterine wall and it is not unusual to find giant cells lodged between the muscles deep down within the walls of the uterus. They have been known to invade blood vessels and to be carried as emboli to distant organs. After the pregnancy, these invasive cells promptly disappear as though the body had some mechanism for destroying them.

Two curious abnormal conditions may arise as the result of a conception; first, the development of a hydatic mole and there is expelled not a child but a mass of polypoid gelatinous structures which hang together like a bunch of grapes. Microscopically, these polypoid blebs are found to be small chorionic villi enormously enlarged and covered with proliferated epithelium. A section of the uterus removed at this time will show an invasion of these cells in the uterine wall.

The other abnormality following conception is the development and metastasis of chorion epithelioma, which may follow a normal pregnancy, an abortion, an ectopic pregnancy or a placental mole. It is a significant fact, however, that fifty per cent of chorio-epithelioma follow hydatic moles and it is claimed sixteen per cent of hydatic moles become malignant.

Another curious thing in connection with chorioma, pointed out by Marchan in 1895 and mentioned by a number of observers since, is the notable frequency of ovarian cysts, ninety-one per cent presenting bilateral cystic changes. They are apparently corpus luteum cysts that sometimes disappear after the removal of the mole; at other times they do not develop until after the original trouble has been cleared up.

There are three important symptoms of hydatic mole: rapid increase in the size of the uterus, the discharge of blood or bloody serum per vagina, and the escape of vesicles. The last is pathognomonic but is a rather rare occurrence.

With this brief summary I wish to present the following case which came under the care of Drs. Chapman and Burfoot: Mrs. B. L. B., aged 17 years, married in November, 1919. Father died of leukemia, family history otherwise negative. She had diphtheria at nine years and typhoid fever at ten. She had her tonsils and adenoids removed six months ago. Influenza in February, 1920, no other illness. Menses began at fifteen years, regular, with a moderate amount of pain. Her last regular menstruation in July, 1920. She did not menstruate again for forty-seven days. She then had a normal flow for four or five days. She had no further menstruation until October 1st, 1920, when she had severe cramps in her abdomen with vomiting, and began flowing. She was seen by Drs. Chapman and Burfoot who sent her in the hospital with a probable diagnosis of ectopic pregnancy.

After forty-eight hours' stay in the hos-

pital she was sent home. No definite diagnosis was made but it was stated that she did not have an ectopic pregnancy. She continued with a slight bloody flow and persistent vomiting. Ten days later she was sent to another hospital. Their records show an intra-uterine growth which came to the level of the umbilicus. Pulse and temperature normal. Vomited once or twice in twenty-four hours and had a slight bloody vaginal discharge each day. Her condition apparently did not justify interference so at the end of the week she was sent home. After reaching home her condition became much worse. Her vomiting was almost constant in spite of two ampules of corpus luteum a day. Her vaginal discharge required two pads a day. She was referred to me by Dr. Chapman on December 1st, 1920. At that time she was vomiting at irregular intervals but was retaining very little fluid in the twenty-four hours. Her temperature was recorded from 96-4 to 98-6. Pulse rate 120 to 130. Her urine showed a marked diminution in phthalein output, a heavy cloud of albumen, no casts but a few white blood cells. Her blood showed Hgb. 60%; R. B. C. 3,000,000; W. B. C. 5,600; differential count about normal. Blood pressure 160-80. Her physical examination was negative except for an intra-uterine growth about the size of a seven months' pregnancy. There were no fetal heart sounds nor could any solid mass be palpated. The cervix had softened and admitted the tip of the index finger. She had a dark bloody vaginal discharge.

On December 3rd, it was decided to do a hysterotomy. Dr. Lankford was called in consultation and suggested the probability of a vesicular mole, basing his supposition on the rapid growth of the uterus, out of all proportion to the length of the pregnancy and the absence of all evidence of a fetus. In spite of this diagnosis it was decided that a hysterotomy would give her the best show. The uterus was incised and thoroughly wiped out with gauze. There seemed to be very little invasion of the uterine wall with the chorionic cyst. Tubes and ovaries were normal. The uterus was closed as in an ordinary Caesarean section and the abdomen closed without drainage. She had a rather stormy time for the first three or four days then went to an uneventful recovery. There was very little operative or post-operative bleeding. The wound healed by first intention and she was discharged from the hospital on December 15th, 1920. On December 22nd, 1920, she was readmitted to the hospital with a temperature of 101-6, complaining of cramping pains in her lower abdomen, tenderness and a bloody vaginal discharge. Her temperature was normal in twenty-four hours and she had no subsequent rise. Her cramps and vaginal discharge also promptly cleared up. She was discharged on January 8th, 1921. At that time a vaginal examination showed the fundus of the uterus to be at the top of the symphysis, movable and not very tender. There was a boggy mass in the cul-de-sac which felt like fallopian tubes.

She was told to report every two weeks for examination and earlier if she noticed anything unusual.

She was admitted to St. Vincent's Hospital February 23rd, 1921, with a history that she had some bloody vaginal discharge every day since leaving the hospital. At that time the uterus was subinvoluted, soft and boggy. At operation it was about 18 cm. deep. Several fresh vesicles were removed with the curette. The scrapings from the uterine wall were reported non-malignant. 50 Mgm. of radium were introduced into the uterine cavity for eight hours (400 Mgm. hours).

She reported for examination April 4th, 1921. The uterus was firm, normal in size and she stated that, with the exception of a normal three-day menstruation in March, she had no further bleeding after leaving the hospital. She was last seen in June, 1922. At that time she stated that her menstruation had been normal, of three days' duration, without pain since her last operation in February, 1921.

She had put on considerable weight and there was marked improvement in her general condition.

I have reported this case because of the apparent benefit derived from the radium application. Of course, the curettement alone might have been just as effective.

142 *Main Street.*

The Journal of Intravenous Therapy,

100 West 21 Street, New York City, will be glad to send a copy of this journal, upon request, to any one interested in intravenous medication.

PROPHYLAXIS IN ACUTE TYMPANIC DISEASES.*

By J. WARREN WHITE, A. B., M. D., Norfolk, Virginia.

In every branch of medicine today we are bending our efforts towards prevention. We can not intelligently proceed in this direction until we have worked out the etiological factors in a given disease. An effort should be made not only to relieve acute conditions but to prevent recurrences.

The physician, who relieves the symptoms in an acute middle ear infection and treats the ear until the condition clears up, may think that he has done his whole duty towards the patient. I feel, however, that he has not met the obligation until he has studied the underlying causes in each case of middle ear inflammation with the idea of preventing a recurrence of the infection. When we consider what may be accomplished in preventing middle ear diseases, we can easily see that this is an important branch of preventive medicine.

The etiological factors in acute middle ear inflammations may give rise to a very mild degree of tympanic congestion or a severe form of purulent otitis media, and it is impossible to make any dogmatic statement as to which will give a mild or a severe degree of middle ear inflammation. I think that the resistance of the patient at the time of the infection is the controlling factor as to the mildness or severity of the inflammation.

In the mild cases the membrana tensa shows a marked injection and there is an absence of bulging. This condition usually clears up without operative interference. In the severe cases the membrana tensa is red and bulging and a free myringotomy is indicated. These cases clear up unless complicated by mastoiditis or a chronic process. In the cases that clear up recurrences are frequent, especially among children. It is unnecessary for me to dwell on the dangers from recurrent acute or chronic suppurative middle ear lesions. Our efforts in prevention can only be successful by studying the underlying causes in each case of tympanic infection.

The individual of lowered vitality is more susceptible to middle ear infection than the physically robust. The prevalence of suppurative middle ear lesions among the ill-nourished shows conclusively the susceptibility of this class of patients. That this is a predisposing cause is not generally recognized for the reason that so many cases are overlooked. After drainage is established by a large perforation in the drum head, there is no pain and usually no constitutional symptoms to attract attention to the ear. In a dispensary practice among children, if a routine aural examination is made, a great many suppurative middle ear lesions will be found that otherwise would be passed over in the hurry of a big clinic.

Children undoubtedly are more susceptible to acute middle ear infections than adults. The eustachian tubes in infants and children are anatomically different from those of adults. Its length in an infant at birth is 15 to 16 mm. and in an adult 34 to 38 mm. The calibre of the bony tube of an infant is about as large as in an adult. The membranous and osseous portions of the tube in an infant do not form an angle as they do in an adult, but are nearly in a straight line. Thus in an infant we have almost a straight line only 15 to 16 mm. long and with calibre quite as large as in the adult. In an infant, therefore, the whole canal is much wider in proportion to its length. These anatomical differences are rapidly modified with the growth of the child. In this way can be explained how easily pharyngeal infection is followed by middle ear diseases in children. Adenoids are very frequent in childhood rendering them peculiarly susceptible to pharyngeal infection. Nasal obstruction is one of the most potent predisposing causes of tympanic infection. Large masses of adenoid tissue in the nasopharynx interfering with nasal respiration are a constant menace to the ears, even though the faucial tonsils may be apparently normal. A physician who gives any thought to the subject will see the important relation of adenoids to tympanic diseases. A majority of middle ear diseases in children occur in those having adenoids. Children are very susceptible to the acute infectious diseases and middle ear infections are one of the most usual complications. A careful observation will show that children who have had a successful removal of the adenoids and tonsils will have fewer aural complications in the acute infectious diseases.

Deviations of the nasal septum are among the lesions causing nasal obstruction. This more frequently gives aural complications in adult life.

*Read at the meeting of the Seabord Medical Society at Norfolk, Va., December, 1921.

Acute middle ear infections often follow an acute coryza. In questioning the patient as to how the condition came on, they will frequently answer it followed "a severe cold."

Scarlet fever, diphtheria, measles, pertussis and influenza are the diseases most frequently complicated by tympanic infection.

Among the external causes I will mention a few of the most common. The nasal douche is frequently advised by the physician. It may seem necessary at times; however, it is a very unsafe procedure and not an infrequent cause of middle ear infection. I will report two cases that came under my observation. A nurse while using the nasal douche said that she choked slightly and felt the water go in her ear. She came immediately to the hospital complaining of severe pain in the ear. On examination I found the drum red and bulging. A man, with an empyema of both antra, had daily irrigation of both antra and the nasal cavity by his physician. In a few days a middle ear infection followed in each ear and later on a double mastoidectomy was done. I mention these two cases to show the dangers of the nasal douche, even when used by those who are skillful, and the danger of prescribing it as a routine. I feel that the nasal douche should not be prescribed unless absolutely necessary.

During the swimming season we have quite a number of acute middle ear infections due to diving in cold water. This can be explained by the water taken into the mouth or nose being propelled through the eustachian tubes to the middle ear. Care should be taken not to expel violently water taken into the mouth or nose.

I wish to emphasize the danger in any effort to violently expel nasal discharges with both nostrils closed. This is most important while any acute infections of the nasal cavities are present. I have repeatedly had cases with an acute coryza to tell me that the pain in the ear came on immediately after violently blowing the nose. This point should be brought out to our patients and especially if they are suffering with an acute coryza.

Mastoid infection is practically never a primary condition. It is due to an extension of the infection from nose, naso-pharynx, adenoids and tonsils through the eustachian tube and middle ear. Care should be given the nose, naso-pharynx and throat and any acute infection should receive prompt attention. Prompt drainage should be instituted if there is any infection of the middle ear.

Infections of the middle ear occur most frequently during the winter and spring months. If during this time every effort has been made in a prophylactic measure, the number of cases will be materially reduced.

SUMMARY.

1. Recurrent acute and chronic middle ear lesions are always dangerous.

2. The etiological factors in each case should be studied with an idea of preventing recurrences in the acute conditions and of eliminating the chronic suppurative processes.

3. Nasal obstruction is one of the most potent predisposing causes, and those with no nasal obstruction have fewer aural complications.

4. The eustachian tubes in infants and children are anatomically different from those of adults. They are shorter, nearly in a straight line and with a calibre almost as large as an adult. Any pharyngeal infection is more easily followed by middle ear disease.

In a short paper it is impossible except in a general way to bring out some of the underlying causes in acute tympanic diseases in an effort to stimulate study of this condition, in order to reduce middle ear lesions.

Suite 526 New Monroe Building.

CO-OPERATION BETWEEN INTERNIST AND DENTIST.*

By WARREN T. VAUGHAN, M. D., Richmond, Va.

In the history of clinical medicine and surgery, the first quarter of the twentieth century will stand as an era of non-cooperative specialism. With the rapid development of medical science during the last part of the nineteenth century, physicians soon recognized that for best work, high degrees of specialization had become necessary. This individualistic specialism has served its purpose particularly by enabling each to develop and perfect methods of examination and treatment in his individual sphere. This has been accomplished, however, with considerable sacrifice of horizon, and of successful correlation among the various fields. The progressive men of today are laboring to eliminate these defects by fostering cooperative interest among the various branches of medicine.

*Read before the Richmond Dental Society, June 1, 1922.

In the work of every man conscientiously practicing the art of medicine or surgery, and this broadly includes dentistry, the first and foremost consideration should be, and is, the welfare of the patient. The value to the patient of a specialist in any given field may be expressed by a fraction, the denominator of which symbolizes the patient's medical problem as a whole; the numerator the importance of the specialist's work relative to the entire problem. For any one branch of medicine the numerator is never as great as the denominator. True, the numerators of some of the broader fields of specialization may have greater relative values than others, but it is not until all are combined that they finally acquire a value equivalent to that of the denominator, thereby forming an integer, denoting complete and efficient service to the best interests of the patient. Internal medicine, surgery, otolaryngology, ophthalmology, orthopedics, and all of the specialties, in so far as they bear on the individual case, must be correlated and integrated before maximum efficiency can be assured. And, as long as dentistry and oral surgery are omitted from the list, the sum of all the fractions will still remain less than one.

Just as rhinology and ophthalmology have within recent years been drawn into closer association with internal medicine, so also have internal medicine and dentistry been effecting a rapprochement which as time proceeds will be drawn closer and more firmly, in spite of vehement denials of isolationists. True, medicine has been less closely associated with dentistry than with many of the specialties, but the impetus given by the study of focal infection has served more rapidly to bring the two together. The progressive internist and dentist who read aright the future development of medical thought will devote their best efforts to establishing more efficient teamwork and more intelligent cooperation.

In a discussion such as the present, any review of the various points of contact between dentistry and internal medicine must perforce be superficial and incomplete. The following brief enumeration will, however, serve to point out the general lines of convergence.

When can the internist be of service to the dental surgeon? First, by advising as to the presence, identity, extent and importance of systemic disease in cases where the dentist has been led to suspect its presence. The field of examination customarily covered by the dental surgeon is usually limited to the lips and mouth. His suspicion may be aroused by abnormalities of the lips, gums, cheeks, teeth, jaws, tongue, palate, tonsils or pharynx, or perhaps by more obvious pathologic conditions of the face or head.

Syphilis is manifested in the mouth in a variety of ways. The buccal mucosa may be the site of a primary lesion, of mucous patches during the secondary stage, of gummatous ulcerations in the tertiary period, or of leukoplakia which is frequently syphilitic in origin. Not even the most experienced syphilographer will claim to positively identify the mouth lesions of syphilis without more thorough examination, and usually serologic tests.

The notched and pegged teeth, characteristic of heredospecific infection, occasionally occur in the absence of this disease, and are due to other local or general causes. Hutchinsonian teeth in and of themselves are not pathognomonic of hereditary syphilis, and when teeth of this description are found a more general examination is indicated. Furthermore, not all cases of hereditary syphilis display typical Hutchinsonian teeth.

Separation of the teeth may be due to acromegaly.

As a matter of fact, where faulty dentition cannot be accounted for by local pathology, further search in the field of internal medicine is usually indicated.

The dentist has good opportunity to observe the darkened gum margins characteristic of lead poisoning.

At not infrequent intervals the dental surgeon is consulted by his patient for the treatment of bleeding gums and the various causes for this condition should be borne in mind. General diseases sometimes associated with bleeding gums are scurvy, myelogenous leukemia, lymphatic leukemia, particularly acute lymphatic leukemia, Hodgkin's disease, pernicious anemia, aplastic anemia, splenic anemia, hemophilia, purpura, syphilis, mercurialism, iodide poisoning, phosphorus poisoning, arsenic poisoning, lead poisoning, and febrile or asthenic states accompanied by sordes.

Bleeding gums may accompany local conditions such as injury by tooth brush, dental caries, tartar, pyorrhoea alveolaris, alveolar abscess, papilloma, epulis, myeloid sarcoma,

epithelioma, actinomycosis, aphthous stomatitis, ulcerative stomatitis, gangrenous stomatitis, tuberculous gingivitis, erythema bullosum, dermatitis herpetiformis, and pemphigus.

None could require that the dental surgeon be enough of an internist to recognize all these conditions, but he should be sufficiently conversant with the work of the internist to *recognize the advent of a diagnostic problem requiring solution.*

Foul breath is not alone due to pyorrhoea or other infection within the mouth. It occurs in atrophic rhinitis, septic tonsillitis, Vincent's angina, cancer, septic lung infections, severe toxic conditions, particularly those affecting the gastro-intestinal tract and peritoneum, chronic gastritis, and after the ingestion of certain substances such as garlic, onions or paraldehyde.

The lips may be affected in herpes, lupus, lichen planus, urticaria, psoriasis, syphilis, herpes zoster, eczema, epithelioma, impetigo, Fordyce's disease, and other more rare conditions. Furrows or rhagades at the corners of the mouth should always arouse suspicion of congenital syphilis.

Pigmentation within the mouth, normally seen in colored individuals, is met with in Addison's disease, arsenic poisoning, and less frequently in pernicious anemia and cachectic diseases.

The causes of excessive salivation are numerous. It may be a simple nervous or hysterical ptyalorrhoea. It may be due to medicines or drugs such as mercury, iodides, potassium chlorate, phosphorus, arsenic or aconite. It frequently occurs in general stomatitis. It may accompany mechanical difficulties in swallowing, as in mumps, peritonsillar abscess and fracture of the jaw, or paralysis of deglutition in various neurologic lesions. It may follow irritation of the fifth nerve as by a jagged carious tooth, a rough filling, an ill-fitting plate, a foreign body in the gum, a gumboil, a salivary calculus, a ranula. Finally, it may follow gastric reflexes as in dyspepsia, gastric ulcer, etc.

Gumma, carcinoma, diphtheria, tuberculosis and streptococcus infection occasionally involve the palate, particularly the soft palate.

Swelling of the jaw may be due to injury, inflammatory affections, malignant or benign tumors, acromegaly or leontiasis ossea.

Trouble with the tongue should be quickly recognized. The smooth shining, glistening atrophic tongue of pernicious anemia appears earlier in that disease than does the anemia itself, and is more constant than any other sign or symptom except gastric anacidity. In 64 per cent of cases of pernicious anemia the appearance of the tongue is typical, and in an additional 19 per cent it is suggestive. I have on many occasions first been led to suspect the presence of this disease by observation of the tongue. This finding is not diagnostic but calls for further study.

The beefy red, angry looking furrowed tongue of pellagra is again quite distinctive, and may occur in the absence of skin lesions. The tongue of sprue is frequently not unlike that of pernicious anemia. Tuberculosis and cancer of the tongue require careful differentiation from each other and from syphilis. Ulcers may also occur on the tongue in ulcerative stomatitis or from chronic traumatization from a jagged tooth. Any chronic ulceration in the mouth calls for a detailed medical examination.

Again the physician may be of service to the dentist in a consultative way by correlating the local requirements as recognized by the dentist with the general conditions and needs. Thus, not every root abscess calls for tooth extraction. Where apical infection is present, systemic poisoning and symptoms may result. On the other hand, many individuals go through life carrying undoubted infection around the roots of teeth or in the gums without developing general disease. Several factors other than the mere presence of infection play a part in determining the production of systemic disease. Among these are the abundance of blood and lymph supplies to the infected areas, the extent of the local barrier against spread, and the patient's general resistance and immunity.

The dental surgeon frequently must decide whether he should sacrifice infected teeth which are still fairly serviceable, or which are needful for prosthetic work. It is the duty of the internist to advise with the dental surgeon after a careful general survey, as to the necessity of removing the supposed focus of infection.

In yet a third way can the internist be of service to the dental surgeon. The increasing use of local anesthesia and the frequent employment of nitrous oxide gas has nearly

done away with the use of ether or chloroform in dentistry. Nevertheless the oral surgeon occasionally has need of this form of anesthesia. The more progressive surgeon at present refuses to subject his patient to the unquestionable dangers of a general anesthesia without preliminary examination by a competent internist, of the respiratory tract for acute or chronic infection, the heart for valvular disease or myocarditis, the vascular system for dangerous hypertension or arteriosclerosis, and the kidneys for their functional efficiency. It is safe to prophesy that before many months have elapsed satisfactory tests of the functional capacity of the liver will also have been elaborated which will be of considerable value in recognizing those cases which are predisposed to shock following operation.

The necessity for an examination of this sort preliminary to gas anesthesia can best be guaged by the frequency of post-anesthetic accidents.

When can the dental surgeon be of service to the internist? First, by advising as to the extent and the importance of local pathology in relation to systemic disease. It is the duty of the internist doing diagnostic work to recognize the presence or absence of pathology in infected tonsils, infected sinuses, infected gums, and apical abscesses. But the internist who relies entirely on his own knowledge and ability to make a final diagnosis in every case of this nature will make many errors. He must recognize his limitations in fields outside of his own specialty, and where there is doubt as to the accurate diagnosis his duty to the patient requires that he request a consultation.

In diseases apparently due to focal infection, where the cause of the trouble might be in the gums or teeth, or might equally in the individual case be due to infection in some other part of the body, the internist or diagnostician will do well to consult with a competent dental surgeon as to the relative importance of the dental findings.

Second, the dentist may be of service to the internist by cooperating in improving or removing local pathology in the mouth in a manner best calculated to improve the general of systemic pathology. The physician has not done his entire duty when he demands that apical abscesses be treated by tooth extraction. There should be free discussion with the specialist in dentistry as to how thoroughly the infection should be removed, and what facilities there are for artificial reconstruction of the articular surfaces. There should be careful consideration as to the amount of benefit to be expected as compared with the amount of mutilation done.

Take for example an individual past middle life, wearing an upper plate, and with several pivot teeth in the lower jaw, half of which show apical absorption. Four or five good functioning teeth remain,—sufficient for fairly satisfactory mastication. The case is discussed in detail with the dentist. He advises that for satisfactory results all of the front teeth should be extracted, including the two or three pivot teeth without apical absorption. The patient is very particular about her appearance and desires, if possible, to keep the teeth as they are. The upper plate has never been quite comfortable, and has been a source of considerable annoyance. Undoubtedly the local condition will not be as satisfactory after tooth extraction. A decision must be reached after an evaluation of the benefit to be expected and a consideration of the dangers of non-removal of the infection. If the patient, past middle life, is affected with a low grade chronic arthritis or hypertension, which is moderately incapacitating and at best only slowly progressive, the probable improvement in pathology may be so slight as to favor non-interference. If, on the other hand, the clinical symptoms are of early angina pectoris, or recurrent acute polyarthritis, sacrifice of the remaining teeth in an attempt to limit the progress of the disease would be justifiable.

The dentist may aid the physician by removing sources of irritation, causing local disease which the latter has been called upon to treat. Examples may be found in dental ulcers of the tongue or in trigeminal neuralgia due to buried snags.

He may aid by repairing mechanical defects which have been found to cause disease elsewhere within the body. Thus, many cases of chronic gastritis may be traced to insufficient molar surface and consequent faulty mastication and "bolting" of food.

The value of group medicine has been demonstrated beyond cavil. It is only in this method of practice that the sum of all of the fractions representing the isolated specialities, when

combined, will form an integer indicating complete and satisfactory service to the patient.

The secret of successful group practice lies not in the number of specialists examining the individual patient, but in the correlation of the various findings, their integration into a unified diagnosis, and in the development of a rational plan of comprehensive but individualized treatment. From the nature of his specialty the internist must be responsible for the proper integration of the work. No group practice can be truly successful which does not utilize whenever indicated the services of the dental surgeon. It has been my aim in this paper to describe the manner in which we have found that such cooperation can be best acquired.

To accomplish this it is not necessary that the dentist be a member of a group. In fact it is often better otherwise. As a rule, individuals have their own dentist whom they prefer to any other. It is the duty of the physician, then, to cooperate with the patient's dentist, to the best of his ability.

It has been only after graduation that the dentist and the physician, each following his chosen path, have wandered apart. In the under-graduate work many of the courses of instruction are quite similar. Many of the instructors are the same in both schools. Often, indeed, both have pursued their studies under the same roof. There exists a certain community of interest and of purpose, which, in the practice of non-cooperative medicine and dentistry, has been lost to view. With the return to closer co-ordination in the fields of medicine, the interdependence of these and all other specialities will again be recognized and will be strengthened, with mutual benefit to all concerned.

St. Elizabeth's Hospital.

DIAGNOSIS AND X-RAY TREATMENT OF TOXIC GOITER WITH REPORT OF FIVE CASES.*

By W. E. KILLINGER, A. B., M. D., Victoria, Va.

We are all familiar with the modern trend of thought regarding the etiology of the toxic goiter but, interesting and suggestive as it is, there is nothing in our accepted theory regarding cause that explains its greater incidence, unless it be some factor in our modern civilization,—the strain and restless agitation and the over-crowded day, the more wide spread employment of women, for toxic goiter is almost limited to woman; some factor that makes greater demand on the function of the thyroid than formerly. C. H. Mayo has said: "While not the only factor in influencing the rate at which we live, the thyroid probably has more to do than any other substance with the governing of the speed at which energy is produced in the body." The relationship of goiter to metabolism is sufficient evidence of the importance of the gland as a factor in the up-keep of our vitalizing forces. Infections such as pyorrhoea, tonsillitis, sinusitis, etc., are suggestive but none of these are peculiar to the civilization of today.

To deal effectively with a thyroid disturbance, we must carry in mind the physiological basis for the symptoms of the toxic goiter. In a very large measure these symptoms are traceable to the disturbance of the involuntary nervous system, with its dual representation in the autonomic and sympathetic systems. In the former, the 3rd, 7th, 9th, 10th, and 11th cranial nerves, practically every organ except the brain is represented by this dual supply. The autonomic are stimulative in character, the sympathetic inhibitive in action. If this is translated into symptoms, we have dryness of skin, mouth and eyes, fatigability, dilated pupils, anorexia, etc., as evidences of inactivity of the autonomic or stimulatory system. We reverse the conditions and have moist eyes and skin, fast heart, increased blood pressure, looseness of bowels and tremor as evidences of increased action of the autonomic system. These facts suffice to illustrate the necessity of viewing the question of treating thyroid conditions, not from the narrow viewpoint of a diseased isolated gland as of a mammary carcinoma, but with a clear conception of the universality of the thyroid's influence on the cell metabolism through the body.

The cases reported in this paper have been treated with X-ray combined with rest, with the removal of a focal infection where one was determined. But I do not mean to infer that the management of the toxic goiter belongs to X-ray therapy alone. In fact, we all feel that when the chemist reveals to us the activating agent which causes the characteristic hyperplasia of the toxic goiter, the

*Read at the meeting of the Southside Virginia Medical Association at Victoria, September 12, 1922.

missing link as it were in our chain of facts and fancies, a remedy will be found that will correct the hyperplasia, without resorting to either surgery or radiation.

In reporting such a limited number of cases without sufficient after observation, I realize no definite conclusions can be drawn, still certain important facts can be impressed, and foremost among these is the diagnosis of the toxic goiter. On first thought this might not appear difficult in a disease that has such pronounced and peculiar signs and symptoms. But we find that certain cases of neurasthenia and heart disease are extremely hard to differentiate from toxic goiter.

These cases require in addition to a careful history, physical examination and diagnostic laboratory methods; repeated examinations by the foregoing methods. Of course when we find all four of the cardinal signs, an accurate, diagnosis is not so difficult, but with toxic goiter we rarely see exophthalmus, in fact we see many cases with no eye signs at all. Exophthalmus, when associated with the other signs of the toxic goiter, makes the diagnosis evident; but much more frequently than exophthalmus we find a slight stare, which is generally associated with the widening of the palpebral fissure, the so-called Stellwag sign. Of the other eye signs, that of the lagging of the upper lid when the eye is rotated downwards, von Graefe's sign, is the most important.

Great care must be exercised in the diagnosis of enlargement of the thyroid in these borderline cases, as a certain amount of enlargement is physiological during menstruation. Girls with long thin necks and a prominent isthmus will frequently show an enlargement of the thyroid when the same gland would not be visible were there a moderate amount of fat present. Again, in very fat people, we find a roll of fat running transversely across the neck directly over the thyroid, and located between the folds of the skin.

The tremor of hyperthyroidism, while rather marked in some cases, is clearly related and often hard to differentiate from the tremor common in neurasthenic conditions. It is generally more marked, coarser and less under control in the hyperthyroid states. The tremor of the neurotic is distinctly influenced by mental conditions.

Various heart lesions will give a tachycardia, but if it is due to a heart condition we will usually find at least one of the following signs: enlargement, dystolic murmur, primary disorder of the heart beat, a history of heart failure or syphilitic infection.

The weakness of hyperthyroidism is more pronounced and clean-cut than in other related conditions. The weakness is so pronounced that it forces itself upon the mind of the patient, usually reluctant to admit it. The reverse is generally true with neurasthenia.

Of all the clinical symptoms the emotional disturbances are the most difficult to diagnose. A hyperthyroid patient is in a state of emotional over-action. The mind and body cannot become adjusted to a state of repose. The emotional state is largely one of irritability.

Some of the later laboratory methods which help in the differentiation of borderline cases, especially in the early stage, are increased metabolic rate, thyroid feeding, Goetsch test, and decreased sugar tolerance. Means and Aub state that in 224 observations on toxic goiter and 18 cases of non-toxicity, the toxic cases, judged clinically, run nearly parallel with the rise in metabolism. The estimation of the metabolic rate of a patient is the most accurate laboratory method in differentiating mild cases of hyperthyroidism from conditions which simulate it. The great drawback at present to this valuable test is that it is very difficult for even the experienced to obtain accurate readings. The thyroid feeding is probably more practicable, but it aggravates an already dangerous condition.

The employment of X-ray in the treatment of goiter dates from 1898. At that time the mechanical limitation made the fractional dose method with low penetration compulsory; and even with this technique many brilliant results were reported. Pfahler in 1916 reviewed the literature bringing up to date the X-ray therapy of toxic goiter and the results of his work. Holmes reported the results of roentgentherapy of toxic goiter in the Massachusetts General Hospital. Both these men emphasize the inadequacy of the low voltage fractional dose method, as compared with modern technique. The employment of X-rays produced by high voltage and passed through heavier filters marks a distinct step forward in the treatment of toxic goiter.

The five cases reported in this paper were

of the hyperplastic type, and in each case a careful history was taken, thorough physical examination made, and necessary laboratory methods employed. Metabolic readings were made in the beginning, after three treatments, and after the disappearance of symptoms, where the symptoms disappeared. Especially diligent search was made for a focus of infection, and what was thought to be the etiological focus was found in four of the five cases. The infection was removed before or during the course of the treatment.

Report of Cases

Case No. 1. Mrs. W., white, married, aged 31. Extremely nervous past four years, has lost 25 pounds, tires on least exertion, appetite poor, bowels loose, profuse sweating at night. Past two months has been too weak to stay out of bed more than an hour or two at one time. Has noticed an enlargement of the thyroid the past twelve months.

Positive physical findings. Patient poorly nourished, skin moist, marked tremor of hands, thyroid moderately enlarged, left lobe more than right. No eye signs. Tenderness in left lower quadrant. Pulse rate 94. Leukocyte count 9,200. Blood sugar after glucose infusion .1%. Basal metabolism 35 plus. Infected left tube and ovary were removed. After three X-ray treatments, combined with rest in bed, pulse rate was 80, no tremor, basal metabolism 23 plus. After this, patient was allowed to take a moderate amount of exercise. After six treatments there was still a slight enlargement of the thyroid, basal metabolism 15 plus. She was weak at that time, but at present feels well and does all the house work. She has been discharged seven months.

Case No. 2. Mrs. B., aged 24, married. Has been nervous past year, and the conditions has become much worse the past two months, is very weak and tires easily, she nevertheless tries to do the house work.

Positive physical findings. Both lobes of thyroid uniformly enlarged; no enlargement of the isthmus. Pulse rate 91; metabolic rate 38 plus, moderate tremor. Blood sugar after glucose meal .1%. Patient continued to work while taking treatments. After four exposures no symptoms remained. She is in excellent health at present, and has been discharged five months. This case was of one year's standing, to the knowledge of the patient. No definite focus of infection was found; however her tonsils, which were enlarged at time of examination, were greatly reduced in size by the heavy exposures over the lobes of the thyroid.

Case No. 3. Mrs. S., married, aged 36. Has one brother and one sister afflicted with goiter. She has noticed the enlargement of the gland for the past three years and at present it interferes with breathing when she is lying down. She has noticed her hands trembling for the past eight months, and the past few months has been unable to sew or do any fine work. She had noticed that she tires much more easily than usual the past year. Very little appetite. Said she was conscious of her heart beating all the time, and that it seemed to be running away.

Positive physical findings. Slight exophthalmus. Stellwag's sign positive. Teeth in bad condition, thyroid markedly enlarged, left lobe more than right. There seemed to be a slight enlargement of the thymus in this case. Some tenderness over the gall bladder. Reflexes exaggerated. Blood pressure 108-60, pulse rate 104. No sugar tolerance test was made. Metabolic rate 40 plus. After five treatments pulse rate was 90, just a perceptible tremor. Basal metabolism 20 plus, very little change noticed in the size of the thyroid. Patient was very optimistic and said she felt much stronger. She was given another treatment, but still has an enlarged gland. However, she does all the house work now.

Case No. 4. Mr. W., aged 33, farmer. Led an active life until one year ago; at that time began to feel weak and nervous, weakness has grown progressively worse until at present he can do very little physical labor without becoming exhausted. He has noticed an enlargement of the thyroid the past six months, and for the past month he has been so nervous that he cannot hold a glass of water without spilling it. He has also been bothered with diarrhoea the past month. Some night sweats, not marked.

Positive physical findings. Well developed, poorly nourished, very nervous, constant tremor of hands. Moderate exophthalmus. Positive Stellwag's sign. Teeth in very bad condition. Thyroid markedly enlarged, right lobe more than left. Pulse rate 100. Leukocyte count 10,000. Sugar tolerance decreased. Metabolic rate 48 plus. Knee jerks exag-

gerated. This was the most typical case in the series. Bad teeth were removed and then treatments started. After the third treatment, the tremor was greatly improved, the pulse rate was normal, the basal metabolism reading 23 plus. He said he felt fine and could plow all day. At this time the treatments had to be suspended for a short while due to a slight burn over the right lobe. He seemed to be unusually susceptible to the rays, and was the only patient treated that experienced any difficulty in this way. After several weeks the exposures were resumed, and at present he states that he is perfectly well. The metabolic rate is within the bounds of a normal reading. He still has a slight enlargement of the right lobe, and is still under observation.

Case No. 5. Mrs. H., married, aged 29. Has always been thin and rather nervous. Past three years the nervousness has greatly increased. For the past year she has been bothered with a constant aching pain in the back, has also noticed a slight enlargement of the thyroid. Has lost much weight—20 pounds in the last seven months. Tires easily. Noticed that her urine is bloody at times. At present she cannot be up more than two or three hours at a time.

Positive physical findings. Very poorly nourished, skin moist. Thyroid moderately enlarged, left lobe more than right. Moderate tremor of hands. Marked tenderness over the left kidney. Metabolic rate 42 plus, pulse rate 98. Pus and blood in the urine. Leukocyte count 10,200. Cystoscopic examination showed a pyelitis of the left kidney, colon bacillus infection. Both X-ray treatments and irrigations of the pelvis of the kidney were started immediately. At the end of three exposures, there was very little tremor. Basal metabolism 26 plus. Pulse rate normal. By this time the pyelitis had cleared up under the irrigations. Two more exposures were given, and she was discharged with no symptoms; there was, however, a slight enlargement of the thyroid at this time. She is doing all the house work at present, in addition to taking care of a baby. The thyroid is getting smaller. She is still under observation.

All the ambulatory patients were advised to rest as much as possible during the course of treatment.

The following technique was used:—10 inch spark gap, 6 m.m. aluminum and one thickness of sole leather filter, 8 inch anode skin distance, and six M. A. of current for 12 minutes over each area, treating three areas; one over each lobe of the thyroid, and one over the thymus. Dose repeated in three weeks. Care was taken not to expose the trachea and larynx on account of the involvement of the isthmus.

In suggesting this type of treatment for toxic goiter, I feel that it has certain advantages over other forms of treatment, in that there is no surgical shock, consequently the mortality is very low, and that it can be employed in inoperable cases, also in conjunction with surgery. X-ray therapeutists are criticized by surgeons because of the adhesions formed by long heavy exposures. But these adhesions are said not to be detrimental to operation, if it becomes necessary. Pfahler and Holmes both state that this is an advantage in that it permits an almost bloodless operation.

THE WARING SUCTION TONSILLECTOMY.

By J. B. H. WARING, M. D., Blanchester, Ohio.

When we consider the truly formidable array of instruments for operative removal of the tonsils, which have been presented in recent years, together with the varying techniques and modifications of this and that technique, with which we are greeted in the professional press from time to time, one is somewhat hesitant and apologetic in the presentation of still another method for surgical removal of the tonsils. It is true, however, that in the above named method no new instruments are required over those already in more or less extensive use. The very multiplicity of instruments and methods for operative attack upon the tonsil problem would tend to indicate, however, that our methods to date have certain inherent defects or difficulties in technique, which tend to retard their more general adoption; and thus perhaps retard the production of more uniformly good tonsil work. In the hands of experts, most any method gives us good results when that method has been worked out by the given operator in many hundresd of cases. Largely then the method he is accustomed to, the method he uses in his daily work, is the best method for the given expert.

We are confronted with the fact, however, that tonsillectomy is not entirely in the hands of the skilled nose and throat man—far from it as a matter of fact. The general surgeon attacks the tonsil in a most nonchalant manner as an operation of minor import—as really a piece of minor surgery beneath the dignity of a surgeon of attainment, except for the fee in it; and yet some of the worst end-results I have seen have been operated by general surgeons of wide repute (as general surgeons). I think we should all strive to have tonsillectomy regarded as more of a major procedure, equally, if not more difficult of proper execution than the usual appendectomy. As it is, however, the tonsil is the object of attack not only by the nose and throat specialist and the general surgeon, but equally so by the general practitioner; especially so by the ambitious young physician of today. Yes, they all do tonsil work.

Inasmuch as this is the situation today, it may be relevant to invite attention to a procedure in tonsillectomy,—new, so far as I have been able to ascertain, which offers to the profession generally a simple, safe, rapid and practically bloodless method of tonsillectomy.

In a considerable use of tonsil suction tubes for diagnostic and therapeutic purposes on various types of tonsils, I was impressed not only with the mechanical cleansing of the tonsils by the suction tube, but more especially with the ease in which even deeply submerged tonsils were drawn out of their beds and into the mouth of the glass tonsil suction tube and held there while the suction was on.

Pus, caseous masses and ill-smelling purulent exudate were drawn out of the tonsil crypts and into the suction tube,—in other words, a gross mechanical cleansing of the tonsils of much potentially infective material, which otherwise would be swallowed, or more or less absorbed into the general circulation. From my observations, I believe this "vacuum cleaner" mechanical cleansing of the tonsils could well be incorporated as a preliminary step in technique, applicable to any and to all methods of tonsil removal.

At first I used the ordinary Hurd glass tonsil suction tubes, of varying diameters as the size of the tonsils, and I found that the deeply submerged and adherent tonsils were drawn out of their beds and held in the mouth of the suction tube far more effectually than any of the numerous tonsil forceps I have used. There was no laceration or shredding of the tonsil tissue, as so often happens in the effort to obtain a satisfactory grasp with tonsil forceps, and having them pull out time and again. And yet, as desired, the grasp on the tonsil could be instantly released by simply disconnecting the rubber tubing from the suction tube; and just as easily re-grasped by suction. Visibility was another feature which appealed to me. You could see what you were doing. There was no groping in the dark, so to speak, as so often happens in the course of ordinary tonsil work, with a throat full of mucus or blood. When general anesthesia was used, or local for that matter, a vacuum bottle could be inserted at any convenient point in the circuit of tubing back to the suction pump, and the throat rapidly cleansed of blood or mucus by suction aspiration as often as necessary. The same glass suction tube can be used for this, as for the tonsil work proper.

The tonsillectomy method which I shall describe is, of course, applicable to either local or general anesthesia. Its rapidity of action renders it of especial value in local work with nervous patients, and it also shortens the time necessary under general anesthesia.

The ordinary glass Hurd tonsil suction tube may be employed, although I have designed a special tube* for this work, which obviates the difficulty sometimes encountered of sliding your loop or snare wire easily over end of suction tube and on to base of tonsil.

Under general anesthesia, or local as the case may be, an appropriate sized Waring or Hurd tonsil suction tube (glass) is connected by rubber tubing to a Yankauer or any other good electric pump suction apparatus. In the circuit is incorporated a glass vacuum bottle of about a quart capacity, at any convenient point, for use as a reservoir in suction cleansure of the throat of blood and mucus, from time to time, as may be indicated.

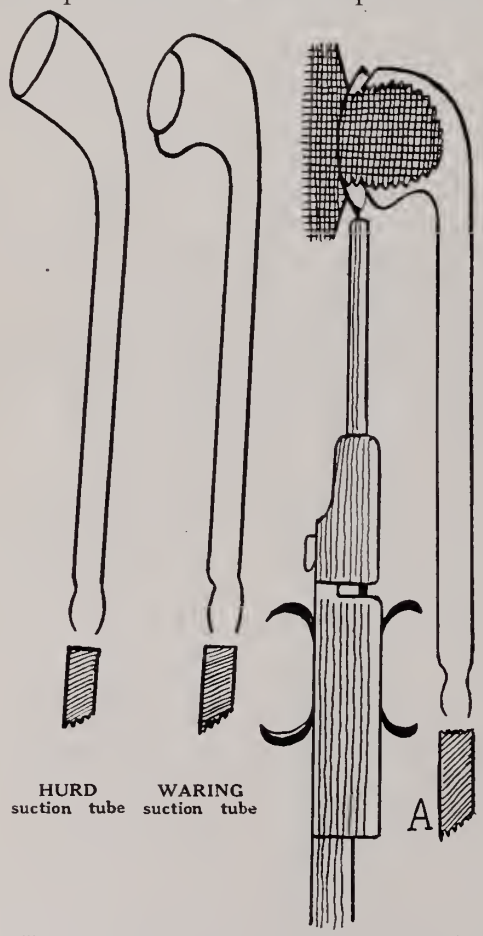
The operation is essentially a one-man job, and except for an assistant to administer a general anesthetic, no other assistance is required.

Any of the modern loop or ringed instruments are applicable, such as the Sluder, Beck, Meding, etc., or the open snare can be used just as well, and in some ways better. At present I am using the open snare on a Beck-

*The suction tube sets may be obtained from The M. I. M. Company, 634 Woodward Building, Washington, D. C.

Pierce tonsillotome, with about a No. 8 snare wire.

The glass tonsil suction tube is passed through loop of the snare, or tonsillotome, which is then allowed to hang freely suspended from shaft of tube until used. A suction tube of sufficiently large mouth to include the tonsil having been selected, the suction apparatus is regulated for enough suction to obtain a firm grasp of the tonsil, and under direct inspection the mouth of suction tube is passed in between the pillars and the



Tonsillectomy by the Waring suction method. Half approximate size.

(diagramatic)

Tonsil is engaged firmly in mouth of glass suction tube. Snare loop slipped over end of tube and on to base of tonsil, in readiness to enucleate. Beck-Pierce tonsillotome in use.

A—Rubber tubing slipped over end of suction tube and leading to suction pump.

tonsil engaged. The suction pump is now turned on. It will be seen that the tonsil is now drawn completely out of its bed and firmly in the grasp of the suction tube, which, being of clear glass, enables the operator to see exactly what he is doing. There is no danger of including the uvula, or damaging the pillars, as sometimes happens in other operative methods. Lightly steadying the suction tube in one hand, the snare loop is carried down over end of suction tube and on to base of tonsil, the left hand for the right tonsil, and the right for the left tonsil. With my improved tubes, the snare loop slips down over base of tonsil very easily as compared to when the Hurd tube was used at first, and the tonsil enucleated by tightening down the snare rapidly, or better by slowly screwing down as is possible in the Beck and similar instruments. This makes a practically bloodless operation, and it will be found the tonsil is enucleated rapidly and cleanly, with smooth fossae and with no damage to adjoining structures. The same procedure is carried out with the second tonsil.

After treatnent may follow whatever routine the operator is accustomed to. There is practically never any primary bleeding to speak of, and I have never had secondary hemorrhage from the method; the throats rapidly heal over, with a minimum of discomfort to the patient. I usnally give calcium lactate in appropriate dosage several days beforehand—a coagulation-time test can be used to advantage in all cases prior to operation—and for any oozing in fossae after operation I have found Monsel's solution in glycerin a very effectual haemostatic.

Advantages of the operation over existing techniques are that it is so simple the operator of limited experience even can operate rapidly, safely and with uniformly good results. This cannot be said of some of the older methods, which require considerable training and experience, before one is competent in their use. It is practically bloodless in all cases, so that no time is lost under general anesthesia in haemostasis; and further, it does not require the elaborate armamentarium sometimes seen in tonsillectomy. The method is of especial value in the deeply submerged type of tonsils, so difficult of attack under ordinary methods.

109 *East Main Street.*

WIRE RING IN ESOPHAGUS: REMOVAL.

By ELBYRNE G. GILL, M. D., Roanoke, Virginia.

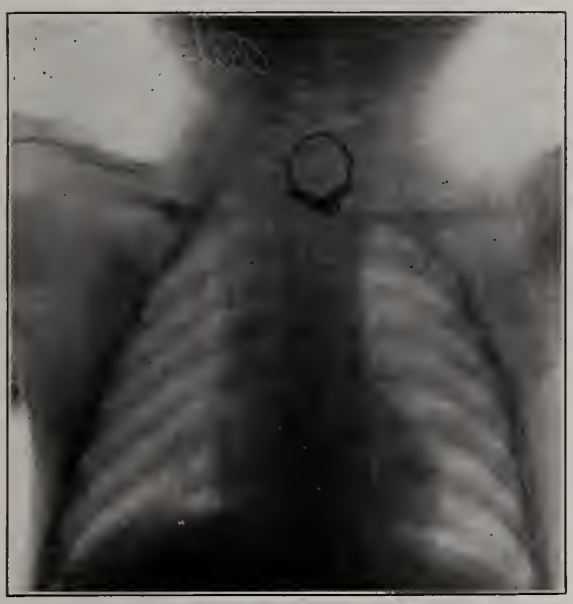
Patient, W. H. S., age seven months, referred to me, August 3, 1922, by Dr. W. W. Chaffin, of Pulaski, Virginia.

Parents gave the following history: For past two months child has been having chok-

ing spells after nursing. History otherwise negative.

I referred the patient to Dr. J. T. McKinney, for an X-ray examination and his report is as follows: "Chest shows the shadow of an opaque metallic ring lying in the esophagus, the lower border of the ring being opposite the sternoclavicular articulation. The heart and mediastinum are slightly pushed to the right side."

I sent the child to the hospital and with the use of the Jackson's small size laryngoscope and laryngeal grasping forceps I removed the wire ring without any anaesthetic, either local or general. The time of the operation one minute. Assistant Dr. F. A. Farmer.



The child left the hospital the following day, in good condition. I have heard from the parents since and the recovery has been uneventful and complete.

After receiving the rontgenologist's report and closely questioning the parents, the following fact was brought out which they did not give at first: they stated that the older children, about two months ago, were making wire rings and they remembered the baby playing with one of the rings and it was about this time the child's choking spells began.

In all cases of suspected foreign bodies in air or food passages, a careful history of the case is always important.

612 *MacBain Building.*

PROSTATECTOMY: A REPORT OF CASES, WITH SPECIAL REFERENCE TO PRE-OPERATIVE AND POST-OPERATIVE TREATMENT.*

By AUSTIN I. DODSON, M. D., Richmond, Va.
Urologist to St. Elizabeth's Hospital, Instructor in Genito-Urinary Surgery, Medical College of Virginia.

During the past three years, prostatectomy has been done on sixteen patients at St. Elizabeth's Hospital, and one on our service at another institution. They range in age from 56 to 77 years, and the duration of their symptoms from one week to fifteen years. Eleven of these men were admitted with complete retention; the remaining had a residual of from 6 to 28 ounces. There was one death from peritonitis following suprapubic prostatectomny. The remaining sixteen were discharged well. There were two cases of carcinoma, both of whom are free from symptoms of cancer, one eighteen months after operation, and the other three months. The preparatory and post-operative treatment of these patients has been in my charge, while the operations were done by Dr. J. Shelton Horsley.

Each patient is a law unto himself and his individual characteristics should be carefully studied and patiently dealt with. He should be made to feel at home and his habits interfered with as little as possible.

The first step in the preparation is the institution of drainage. In patients with ten ounces or less residual, complete drainage may be carried out at once without danger. We prefer drainage by suprapubic cystotomy. In our hands patients have had less discomfort and have made more rapid improvement with this drainage than when a catheter was retained in the urethra. A mushroom catheter can be placed in the bladder and the wound sutured around water-tight, giving excellent drainage without the discomfort of the urethritis, bladder spasm, and added danger of epididymitis resulting from an indwelling catheter. When there is a greater residual than ten ounces it should be reduced gradually, since the sudden withdrawal of large amounts of residual urine frequently results in suppression and uremia. It has been our custom to drain the bladder, then run in half the amount of sterile boric acid solution. The amount is reduced by one-fourth daily until no solution is left in the

*Read before the Southside Virginia Medical Society, Victoria, Va., Tuesday, September 12, 1922.

bladder. After completely emptying the bladder for a few days, depending upon the patient's response, constant drainage may be safely carried out. Frequently these patients have a rather marked cystitis, which is very effectively combated by the administration of large doses of urotropin and daily irrigations with supersaturated solutions of boric acid.

During this period of preparation, frequent tests of the kidney function should be made. The most satisfactory tests are the phenolsulphonephthalein, blood urea nitrogen, and the Mosenthall two-hour renal test. Each acts as a check on the other, and a more satisfactory conclusion can be drawn than when only one test is relied upon. The Mosenthall test is easy to make, and frequently gives information not obtained in the other tests. Attention has been called to this in a previous paper ("The Diagnostic Value of Analysis of of the Urine," Dodson and Ashworth, Va. Med. Monthly, April, 1922). We have never operated upon a patient with a phenolsulphonephthalein elimination lower than 30% in two hours or a blood urea nitrogen retention greater than 28 milligrams per 100 cc.

The next most important feature is the blood pressure. Drainage of a chronically distended bladder always results in some derangement of the circulatory system, manifested by a fall of the blood pressure. When the patient has become accustomed to an empty bladder the pressure will rise again. It will rarely be as high as before drainage was instituted, but a constant level should be maintained over a period of several days before a prostatectomy is done.

During the period of preparation the patient should be permitted to be up and around at will. He should be encouraged to drink large quantities of water. The diet should be suited to his individual taste as nearly as possible. Protein should be limited, and the diet should be almost salt-free.

The time required for preparation varies greatly with individual cases.—in our series from one week to eight months. It is not a question of how long they are to be treated before prostatectomy; a definite standard of preparedness must be required before operation is done.

J. W., colored, was admitted to the Retreat for the Sick Hospital, suffering with complete retention. His blood urea nitrogen was 50 milligrams per 100 cc. of blood, and phenolsulphonephthalein elimination was 15% in two hours. There was marked edema of his feet and ankles, and some ascites. After catheterization for about a week, a suprapubic drain was inserted. After another week very little improvement was noted. He was sent home under the care of his physician. Two months later he returned markedly improved. The phenolsulphonephthalein elimination was 35% in two hours, and blood urea nitrogen 22 milligrams per 100 cc. Prostatectomy was done, and two weeks later he was discharged well.

In the majority of cases, the post-operative care consists mainly of careful nursing. The patient should be kept in a warm bed in a well-ventilated room, free from sudden temperature changes or draughts. A large intake of water should be required. If it cannot be taken by mouth, it should be given subcutaneously. It is our custom to give every patient operated upon from one to two thousand cubic centimeters of Locke's solution subcutaneously during the first twenty-four hours after operation. The administration of this solution, containing the chemical constituents of the blood, is started when the operation is started. It is mostly absorbed by the time the patient reacts, thereby eliminating to a great extent the discomfort incident to its use. It is utilized at a time when fluid is most needed and when the patient is less apt to take it by mouth. Sufficient opiate should be given to keep the patient comfortable.

Hemorrhage, shock, sepsis and uremia are the four chief causes of disaster following prostatectomy. Hemorrhage and shock are so closely related in prostatic cases that they may be treated together. Gentleness during the operation and care in controlling bleeding before the patient leaves the table will aid greatly in preventing further trouble. Hypodermoclysis and the application of external heat are also very helpful. Should shock or hemorrhage occur, the most satisfactory treatment is a direct transfusion of blood. Direct transfusion is free from the dangerous reactions frequently met with in the citrate method, and is far superior in its results. These facts were brought out in a recent article ("Direct Transfusion of Blood," Horsley, Vaughan and Dodson, *Archives of Surgery*, Sept., 1922). The proper matching of the patient with one or more relatives or friends

for possible transfusion is a requirement that we insist upon before operation. Valuable time may be lost in securing and matching a donor when actually needed. We have made use of transfusion in three cases with excellent results.

The following case, Mr. J. W. W., aged 77, was operated upon for cancer of the prostate. He left the table in good condition, with the pulse 90. Two hours later he began to bleed rather profusely and his condition became critical. The systolic blood pressure was 75, diastolic not obtainable, pulse 160. He was transfused from his son. After fifteen minutes of transfusion his blood pressure was systolic 115, diastolic 85, and pulse 120. The patient made an uneventful recovery.

Free intake of fluids and free drainage are the best safeguards against infection. Frequent irrigation of the bladder with supersaturated boric acid solution both before and after operation is helpful. It must also be remembered that poor nourishment and the loss of large quantities of blood greatly handicap these old men in resisting infection.

With the present accurate test of kidney function, uremia should no longer exist as a complication. This feature should be determined during the pre-operative treatment.

Epididymitis, frequently a troublesome complication, can usually be prevented by supporting the testicles on an adhesive strap bridged across from one thigh to the other. When it occurs, hot applications, in addition to support, are very helpful.

Book Announcements

The Elements of Scientific Psychology. By KNIGHT DUNLAP, Professor of Experimental Psychology, Johns Hopkins University, Baltimore; Author of "Mysticism, Freudianism and Scientific Psychology," etc. Illustrated. St. Louis. C. V. Mosby Company. 1922. Cloth. 8vo. 368 pages. Price $3.50.

Ophthalmoscopy, Retinoscopy and Refraction. By W. A. FISHER, M. D., F. A. C. S., Chicago. Professor of Ophthalmology, Chicago Eye, Ear, Nose and Throat College; Late President Chicago Ophthalmological Society; Fellow of the Academy of Ophthalmology and Oto-Laryngology, etc. Published by the Author, at 31 North State Street, Chicago. Cloth. 12mo. 218 pages and index. 248 illustrations including 48 colored plates. Price $4.00.

Bibliography of Hookworm Disease. Publication No. 11. The Rockefeller Foundation. International Health Board, New York City. 1922. Paper. 417 pages.

Government Plans Physicians' Schools.

Plans have been announced for the establishment by the Veterans' Bureau of post-graduate schools for the training of government physicians in the treatment of mental diseases and tuberculosis. The school for the training of the men specializing in these diseases will be at St. Elizabeth's Hospital for the Insane at Washington, D. C., and at the Veterans' Bureau Hospital, Oteen, N. C.

Charles Street, Its History and Growth,

Is the name of a little pamphlet issued by the Charles Street Association of Baltimore, Md. The history given of the street is interesting and the booklet also gives names of some of the places at which to shop in Baltimore. This Association has headquarters in Fidelity Building.

The Association of Military Surgeons of the U. S.,

At its recent convention held at Walter Reed General Hospital, Washington, D. C., elected Col. Charles Lynch, M. C., U. S. Army, president, and Col. James R. Church, U. S. Army retired, secretary-treasurer.

The Christmas Seal Sale

Is now on and the call is again made for each one to contribute his mite, or more, to this worthy cause. This will be the fifteenth call to buy seals, the proceeds from which have done so much to stamp out tuberculosis in our midst. In protecting those who have it, we are also protecting ourselves.

In Virginia alone, last year, $54,172.97 was raised by the sale of the seals. Of this amount, $33,893.60 was returned to the various counties and cities in which the money was raised and was spent for local needs under the general direction of the Virginia Tuberculosis Association.

Buy your seals now!

Directory of Child-Health Agencies.

The U. S. Department of Labor, through the Children's Bureau, has just issued a comprehensive directory of 861 local child health agencies in the United States. These agencies are actively engaged in the promotion of child health through maternity care, infant care, and the care of the child of pre-school age.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 NOVEMBER, 1922. No. 8

Editorial

Transduodenal Drainage of the Biliary System or Non-Surgical Drainage of the Gall Tract.

Any procedure offering the possibility of irrigating and draining the gall tract without a major abdominal surgical operation, with its risks, should receive fair consideration during the period of trial and evaluation. The frequency of gall tract infection, which ultimately becomes of so serious a nature as to require the opening of the abdominal wall, the gall tract and the introduction of a drainage tube therein, and the direct siphonage of infected secretions and fluids, is, indeed, very great. Operations of this sort are needed in the face of gross pathology and non-surgical procedure should not supplant surgery in this type of case. The field of usefulness for transduodenal drainage of gall tract is rather limited, it would seem, to infections of recent occurrence, before serious and marked pathology has occurred. It is merely of interest to cite experiences and to quote opinions upon its value as pertaining to the early bile-tract-inflammations, because in the more advanced and gross evidences of pathology it can be of little efficacy. But it is encouraging, at least, to feel that into the hands of practitioners and at the bedside a procedure is being favorably introduced which appears to offer a means of early diagnosis and therapy in cases in gall tract infections.

There appears to be some doubt as to the evidence that A. B. & C. samples of bile may be assigned to (1) the common duct, (2) the gall bladder and small bile radicals respectively; that the procedure may be conducted under sterile conditions; that sterile bile samples may positively indicate a non-infected gall tract. Much work must be done in the clinic and laboratory before one can justly arrive at a safe judgment that the evidence obtained by non-surgical gall tract drainage is accurate and meets requirements of scientific procedure.

It is said by one from the Mayo Clinic that it is impossible to sterilize the stomach or duodenum and, also, to pass a duodenal tube through the mouth, an incubator and habitat of bacteria, without transplanting bacteria with the tube-end. Further, it is urged that bile from a patient with chronic cholecystitis is often, if not invariably, sterile, the infection being in the wall of the viscus rather than in its secretion. In operation of gall tract, organisms were found in only 19 per cent. of gall bladders removed, according to Drennan, quoted by Hartman.*

On the other hand advocates of the method have secured good clinical results and thoroughly urge that it be used. Friedenwald and Morrison, quoted in *The Therapeutic Gazette*, May 15th, 1922, conclude, favorably, in this way:

"1. The method of biliary drainage, as instituted by Lyon, furnishes a valuable aid in the diagnosis of gall bladder infection. It is particularly valuable in that it enables us to diagnose these conditions early before evidences of complications have manifested themselves.

"2. It presents an important means of determining the presence of focal infection in the gall bladder, a condition which may be of the greatest therapeutic and diagnostic value in obscure conditions.

"3. While this method of treatment is still in its infancy and is as yet too new to draw conclusions regarding its end results, there can be no question that it furnishes us with means of affording definite relief in certain biliary affections for which hitherto radical measures have been required. It is extremely valuable in the treatment of catarrhal jaundice biliary stasis and gall bladder infections and is helpful in relieving symptoms which may still remain following gall-bladder operations."

*Hartman, Annals of Clinical Medicine, Sept., 1922.

As above indicated, probably no recent contribution to medical literature has attracted so widespread an interest in the profession, as the method of non-surgical drainage of the biliary passages, first set forth by Lyon in September, 1919.

This preliminary report has been followed by a series of admirable papers by Dr. Lyon, amplifying the method and reporting its use by him in the diagnosis and treatment of the diseases of the biliary system.

Others have taken up the work and the journals of late have abounded with literature on the subject. It has been alternately lauded and condemned, being caustically criticized by Einhorn, Crohn, Dunn, Bassler and others; while the works of Brown, Smithies, Sachs, Friedenwald, Whipple, Simon, and Sinnott have practically confirmed the soundness of its principles.

It is not unnatural that the method has attracted a wide-spread interest. Symptoms referable to the gastro-intestinal system, and particularly those of the upper right abdominal quadrant, are often confusing. It is seldom that we get a clear cut and unmistakable picture of gall bladder disease. Particularly is this true of the early infections. Here an early diagnosis would aid us materially in coping with the condition medically; before the tissues are irreparably damaged, and before the condition becomes definitely surgical.

Of course Roentgenological examination of this region is of value as a diagnostic procedure, and should always be carried out in suspected cases, but its use has been disappointing and it is admittedly lacking in its ability as a dependable diagnostic aid.

That which has been said in regard to diagnosis can also be applied to the present status of our therapy. Surgical procedure is by no means a panacea in the treatment of these conditions. Many is the patient who has undergone the dangers and discomfort of a cholecystectomy or a cholecystotomy to be seized a few months later with the symptoms from which they suffered prior to operation.

If by collecting the specimens of bile through the duodenal tube and studying each specimen grossly, chemically, bacteriologically, and cystologically, we are able to make an early diagnosis of pathological conditions in different portions of the biliary mechanism, we have taken a long step forward, and can undoubtedly deal with these conditions medically, without resorting to dangerous surgical procedure. This would be the method of choice even in patients who are good surgical risks, not to speak of those who are afflicted with cardiac and renal conditions in which surgical endeavor is impossible. Brilliant results have followed the use of this method in the treatment of catarrhal jaundice, choledochitis, cholangeitis, and cholecystitis.

Empyema of the gall bladder has been treated successfully during its acute stage by transduodenal drainage. The method has a distinct merit as a post-operative follow-up treatment, to continue to drain bile which is still infected and which is beyond the limits of surgical drainage.

Cases of so-called "biliousness" are markedly benefited by the use of the duodenal tube. In these cases we find a definitely static infected bile, which, if left to itself, would probably result in the formation of gall stones. It is not claimed that cholelithiasis is within the scope of biliary drainage. This admittedly is work for the surgeon. Is it not possible, however, by early detection of the infection, followed by frequent drainages, and such supplementary treatment as deemed advisable, to overcome the inflection and thus prevent the formation of stones?

As yet it would probably be unwise to accept all of the things the proponents of biliary drainage claim for it. It would be still more unwise, however to listen to much of the criticism heaped upon its head, or to voluntarily condemn it without giving it a trial.

The procedure is a rather simple one. The patient is instructed to fast on the night before the treatment. At 9 A. M., after the teeth have been cleaned, the mouth cleansd and the throat irrigated with an antiseptic solution, the sterilized tube is introduced. After the tube is passed into the stomach, this organ is washed clean with water and then flooded with 1 to 1,000 solution of potassium permanganate. This last process is used only in cases that show mucus. The patient is then placed on the right side and instructed to swallow an additional twenty centimeters of the tube, making seventy-five to eighty centimeters from the lips. During the following twenty minutes, swallowing efforts are practiced and, within an hour at least, the duodenal tube, in most instances, will pass into the duodenum.

The following points indicate its passage into the duodenum: (1) a change of color, a canary yellow color, (2) a clear limpid alkaline fluid, (3) failure to withdraw fluid recently swallowed, (4) duodenal tug, (5) Roentgen ray examination, (6) inflation with distended lower abdomen without eructation or gastric discomfort.

The aspirating bottle applied to the tube now expresses only duodenal secretion. After 50 c.c. of a warm sterile 33 1-3 per cent. solution of magnesium sulphate is injected into the duodenum and the magnesium sulphate later siphoned off; in a few moments bile mixed with magnesium sulphate appears. It may be necessary to again stimulate with magnesium sulphate solution before a good response is secured. The first bile is from the common duct and requires from one to three minutes and amounts to 10 to 20 c.c. This is clear, light yellow in color—(A). Next, there comes a darker bile which is more viscid: this gall bladder bile (B), amounting to 35 to 90 c.c. Following this there is a third variation in grade of bile which is thought to be directly from the bile radicals, freshly secreted and amounting to about 10 c.c. After this aspiration and irrigation of the biliary system is completed about 250 c.c. of Ringer's solution is slowly injected into the intestines for the purpose of flushing out infected material. Cultures are taken of the bile collected from each region: (1) the common duct, (2) the gall bladder, and (3) the bile radicals.

General comment upon this procedure by the internist points to the advantages to be secured by this method of duodenal contact. The procedure should be studied further in order to establish or disprove the claim to accuracy of diagnosis of a state of the gall tract from the standpoint of infection by the examination of bile:—samples obtained after the method of Lyon.

But this aside, coming from the realm of the absolute, more into that of practice, it is a very fortunate procedure that places the internist in tube-connection with the ducts draining the liver and pancreas. This procedure may also be a means of disclosing factors in gastric digestion and gastric motility of extreme importance. This is particularly true in patients beginning the disturbances of gas eructations, heart burn and dyspepsia.

In pursuing the practice of transduodenal biliary drainage, the etiology of the infection must be kept in mind. It seems that Lyon's observations indicated the primary forces of infections in these cases and were found to be infections of the "upper respiratory and digestive tracts"; "the six principal points of primary focal infections we found to be in the tonsils, gums or teeth, the posterior nares, sinuses or the bronchial tree." The five principal secondary foci are the stomach, the duodenum, the gall bladder, appendix and recto-sigmoid colon.

The searching for the etiologic factor at work in the case of bile tract infection is important. Cases of this sort should be studied from this point of view. It is not enough to improve the gastric symptoms and to relieve the patient of infections of the gall tract. At any rate, it is not enough to suspend investigation upon obtaining non-infected bile. The cause of this original infection should be sought and primary infection removed or drained.

GOOD ROADS!
If you want them, see your representatives and senators.
GOOD ROADS!

DR. GEORGE ROSS' BIRTHDAY.

Virginia doctors congratulate you upon your eighty-fourth birthday!

You have fought a good fight; you have kept the faith; and your fellow craftsmen throughout this Commonwealth greet you in admiration and affection. Your long years so splendidly spent answering the call of those who suffer and languish; your span of life, given with princely grace to the service of the sick—is truly a career of greatest success.

Your courteous and courtly bearing as a physician, your unfailing loyalty to the highest tenets of the craft, your skill as a practitioner of medicine and surgery, your high ideals of life and of character, as shown in your daily walk and conversation, are virtues which, in you, your fellow doctors revere and honor.

Dr. Douglas Freeman, the able and versatile Editor of *The News Leader*, Richmond, wrote the following editorial upon the occasion of Dr. Ross' eighty-fourth birthday. We quote it in full appleciation of this distinguished layman's tribute to our honored friend.

Dr. Ross' Birthday.

"If Richmond people ever permitted themselves to express the things they feel, traffic would be blocked tomorrow on Park Avenue opposite Shafer Street and crowds would overwhelm the house numbered 903. They would come to express their thanks to a man who has served thousands of them. They would come, on the fitting date, to congratulate one of the oldest, one of the best-known and surely one of the best-loved physicians of Richmond. For tomorrow is the eighty-fourth birthday of Dr. George Ross.

"To recall to readers the milestones in Dr. Ross' life is to list famous names and historic places. He was graduated from the Virginia Military Institute in 1859, the year of the John Brown raid, and when Jackson was an instructor. Few living men can recall as many details of the great 'Stonewall's' days at the institute as can Dr. Ross. From Lexington he went to Charlottesville, where he was awarded his medical degree in the class of 1861—the class that wanted to enlist to a man for the defense of Virginia. Throughout the war, Dr. Ross wore the gray and ministered to the wounded. When the struggle ended he came to Richmond. His name is to be found in the Directory of 1866, when his residence was at 701 East Franklin. Thence he moved to First and Franklin, where he lived until 1912. His home has been on Park Avenue since that time.

"The record of his fifty-six years of service in Richmond cannot be put in type. His high professional standing, his inspiring influence on the younger physicians, his rigid adherence to the ethics of his calling—these things are known to all Richmond. But the relief he administered to thousands who could not pay, the constancy of his attention to patients, the hope he whispered to failing ears, the loyalty he displayed to the good old cause of the South, the fidelity of his long wardenship at St. Paul's—these never can be known in their fullness. He has kept the secrets of his most splendid acts as steadfastly as he has kept the faith.

"Dr. Ross was sick this summer. The report of that fact was distress to the host that loves him. His condition now is much improved and has permitted him to ride out in a motor-car. This encourages Richmond to make of him a request when it pays tribute to him tomorrow. That request is nothing less than that he keep burning for at least another decade the light of his inspiring personality."

News Notes

The Norfolk Meeting,

Now but a pleasant memory, had a registered attendance of about 500 physicians, in addition to the ladies and exhibitors. The scientific and social features were up to the high standard always maintained by the Norfolk profession. The commercial exhibits were most attractive. The local committee of arrangements, with Dr. R. Lloyd Williams as chairman, is to be congratulated on the great success of the fifty-third annual meeting.

Most of the material having been prepared for the current issue, prior to the time of the convention, we are compelled to defer a full report of the Norfolk meeting until the December issue. The following are the new officers elected for the ensuing year: President, Dr. John Staige Davis, University; first vice-president, Dr. E. L. Kendig, Victoria; second vice-president, Dr. Charles R. Grandy, Norfolk; third vice-president, Dr. R. S. Griffith, Basic; secretary-treasurer and business manager, G. H. Winfrey, Richmond; editorial and business assistant, Agnes V. Edwards, Richmond, both of the latter being re-elected. Councilors elected from the State-at-large were Drs. Isaac Peirce, Tazewell, and Lawrence T. Price, Richmond; councilor for the fifth district, Dr. D. H. Mason, Ridgeway; seventh district, Dr. R. L. Page, Batesville; eighth district, Dr. Hugh McGuire, Alexandria. Dr. Joseph T. Buxton, Newport News, was elected to succeed himself as delegate to the American Medical Association.

The next meeting of the Society is to be held in Roanoke, the exact date to be set later by the Executive Council.

A Woman's Auxiliary

Of the Medical Society of Virginia, composed of the wives and daughters of the members, was formed at the Norfolk meeting of the State Society. Mrs. J. Allison Hodges, Richmond, was organization chairman, and Mrs. Burnley Lankford, Norfolk, organization secretary of the meeting, which was held to discuss the plans of the Auxiliary. Mrs. R. Lloyd Williams, Norfolk, was elected president for the ensuing year.

The activities of these women's Auxiliaries of the State societies have received the endorsement of the American Medical Association, and their purpose is to co-operate with existing organizations in the promotion of public health work. Twenty-eight counties and cities were represented at the Norfolk meeting and a great deal of interest was manifested by those attending. Mrs. J. Allison Hodges was appointed to represent Virginia in the Women's Auxiliaries at the next meeting of the American Medical Association at San Francisco.

There was an unusually large attendance of ladies at the Norfolk meeting, about 125 having registered. More than half of these were visitors. The entertainments for the ladies were most enjoyable and included an automobile ride to Virginia Beach, with tea at the Princess Anne Country Club, a reception by President and Mrs. E. C. S. Taliaferro, to both the ladies and men, and a luncheon at the Country Club, followed by a ride to the Naval Operating Base, where a full dress parade had been arranged for the benefit of the visitors, through the efforts of Mrs. Southgate Leigh. Mrs. Chas. R. Grandy was chairman of the ladies committee.

Special Course to be Given in Neuro-Psychiatry.

Owing to a shortage of physicians and nurses trained in Neuro-Psychiatric work, the U. S. Veterans' Bureau is offering a special course in Neuro-Psychiatry to a certain number of qualified physicians, on condition that upon completion of such a course they will continue in the service of the Bureau for a period of at least two years thereafter. The main part of the course will be given at St. Elizabeth's Hospital, Washington, D. C., and the teaching staff will be composed of men of ability in their specialties. Physicians who desire to enter the service of the U. S. Veterans' Bureau and to take this course should make application at once to the Director of the U. S. Veterans' Bureau, attention Medical Division, and make request for information concerning necessary requirements, salary while taking and after completing the course, rating, etc., as, other things being equal, members for the course will be selected in the order of their application.

The course will start on January 4, 1923.

New Members of the Norfolk County Board of Health.

Drs. S. J. Tabor, of Cradock, and C. F. Eason, of Hickory, have been appointed new members of the Norfolk County Board of Health, to succeed Drs. A. M. Burfoot, of

Fentress, and A. G. Horton, of Ocean View. Dr. Josiah Leake, of Churchland, was reappointed for another term. The other members of the Board are Charles Old, chairman of the Norfolk County Board of Supervisors, and G. Taylor Gwathmey, clerk of the court of Norfolk County.

Dr. T. M. Mann, Portsmouth, will continue as Norfolk County Health Officer.

Changes at Mt. Regis Sanatorium.

Dr. Albert E. Holmes, recently assistant medical examiner in the Veterans' Bureau, Tampa, Fla., has been appointed associate physician at Mt. Regis Sanatorium, Salem, Va., to succeed Dr. Edward Bancroft, who has accepted an interneship at Lewis-Gale Hospital, Roanoke, Va. Dr. Holmes was graduated from Vanderbilt University in 1916, and, after an interneship at Bellevue Hospital, New York City, served for twenty-seven months in the medical corps, of the U. S. Army.

Miss F. M. Nunnally, R. N., of Stuart Circle Hospital, Richmond, the new superintendent of nurses at Mt. Regis, was for three and a half years superintendent of nurses at W. Va. State Tuberculosis Sanatorium, at Terra Alta. After this she served as assistant superintendent at C. & O. Hospital, Huntington, W. Va., coming to Mt. Regis from Rockingham Memorial Hospital, Harrisonburg, Va., of which hospital she was superintendent.

Mrs. Mary Whittington Brown, who is in charge of the dining room and kitchen at this hospital, is a graduate dietitian from Columbia University, and has had considerable experience at the Post-Graduate Hospital in New York.

Two Chiropractors Fined.

Two chiropractors were fined $50 and costs recently, in the police court at Winchester, Va., for "unlawfully practicing medicine without first obtaining a certificate to practice from the State Board of Medical Examiners," as required by law, and $50 and costs on a charge of practicing medicine without first obtaining a license. Appeals were noted in the corporation court.

The warrants were issued by Dr. P. W. Boyd, a member of the State Board of Medical Examiners.

The Fayette County (W. Va.) Medical Society

Held its regular meeting at Montgomery, October 11, Dr. Horace L. Goodman, of McKendree, W. Va., in the chair. Papers were read by Drs. Ralph W. Stoneburner, Montgomery; C. S. Smith, Beckley; Kenneth D. Graves, and Wm. B. Porter, Roanoke, Va., and Robert K. Buford, Charleston. After the program, a splendid banquet was tendered by the staff of Coal Valley Hospital and was greatly enjoyed. Among those present from a distance were:—Drs. K. D. Graves and Wm. B. Porter, of Roanoke, Va., Arthur S. Jones, Walter E. Vest and J. C. Matthews, of Huntington, W. Va., Robt. K. Buford, of Charleston, W. Va., and C. S. Smith and A. H. Grigg, of Beckley, W. Va.

Changes at Rockingham Memorial Hospital.

Miss Florence R. Wells, R. N., of Clarksville, Va., a graduate of the Rockingham Memorial Hospital, Harrisonburg, Va., has been elected superintendent of this hospital. She has had post-graduate work at Sloane Hospital, Columbia University, New York City.

Miss Helen Echols, R. N., of St. Luke's Hospital, has accepted the position of assistant superintendent and instructor at this hospital.

Miss Mary D. Fairchild, R. N., of Memorial Hospital, Richmond, remains as night superintendent, which position she has held for the past year.

Mr. C. A. Funkhouser, of Harrisonburg, has been appointed as business manager of the Rockingham Memorial Hospital, since the resignation of Mr. Vernon Zirkle.

Overcoat Left in Norfolk.

An overcoat, bearing the clothier's label of Kirk-Parrish, Richmond, was left on Wednesday evening in the hall of the Medical Section in the Shrine Temple, during the meeting of the Medical Society of Virginia in Norfolk. Information about this may be obtained from the Society's offices in Richmond.

The Seaboard Medical Association of Virginia and North Carolina

Will meet in New Bern, N. C., December 5, 6 and 7, 1922. An elaborate program will be presented, features being Symposia on Cancer, Pneumonia and Infantile Diseases. This society enjoys the distinction of having one of the largest average attendances for membership of any medical society in the United States. The social features will be varied and many, one being an old-fashioned Southern "Pork and Chittlings Barbecue." Officers of the Association are Dr. Joseph L. Spruill, Sanatorium, N. C., president; Dr. George A.

Caton, New Bern, N. C., treasurer, and Dr. Clarence Porter Jones, Newport News, Va., secretary.

Dr. Robert Matthews,

A graduate of Trinity College, University of North Carolina, and the Medical School of the University of Pennsylvania, after post-graduate work in the hospitals of Philadelphia and a year in Europe, recently located in Taylor Building, Norfolk, Va., where he is engaged in the practice of general medicine and children's diseases.

Dr. G. C. Parker,

Formerly of Norfolk, Va., is doing neuro-pathological work in the Philadelphia General Hospital, having entered there for a service of three years.

The American College of Surgeons,

At its tenth convocation in Boston, the latter part of October, elected Dr. Albert J. Oschner, Chicago, president, and re-elected Dr. Franklin H. Martin, also of Chicago, director-general. The following doctors from Virginia were elected to membership: Drs. James H. Culpepper and Charles C. Smith, Norfolk; Courtney Edmond, Clifton Forge; J. F. Geisinger, Emory Hill and H. Page Manck, Richmond; Gray G. Holladay, Portsmouth; Alfred P. Jones, Roanoke; James H. Morrison, Lynchburg, and J. E. Rawls, Suffolk.

The Virginia, Maryland & District of Columbia Medical Society

Will hold its semi-annual meeting at Raleigh Hotel, Washington, D. C., November 22. The usual good program prepared by this society will be enjoyed. Dr. Wm. L. Lewis, Kensington, Md., is president; Dr. Robt. Scott Lamb, treasurer; Dr. Wm. T. Davis, recording secretary, and Dr. Joseph D. Rogers, corresponding secretary. All of the last named are of Washington, D. C.

Married.

Dr. Hunter McClung, Lexington, Va., and Miss Nancy Bourne Wayland, of Crozet, Va., October 11.

Dr. John Morton Davis, Lynchburg, Va., and Miss Dorothy Talbott Thomas, Danville, Va., November 18.

Mr. Edward Roger Gallalee, Portsmouth, Va., and Miss Elizabeth Watkins Drewry, November 7. Miss Drewry is a daughter of Dr. and Mrs. William F. Drewry, of Petersburg, Va.

Surgeon Holcombe McG. Robertson,

U. S. Public Health Service, has been assigned to duty in Richmond and is located at the State Board of Health headquarters, 1110 Capitol Street. Dr. Robertson is in charge of Co-operative Rural Health Work in the State and succeeds Surgeon Warren F. Draper who has been transferred to Washington, D. C.

Surgeon Warren F. Draper,

U. S. Public Health Service, who since the spring of 1919 has had charge of Co-operative Rural Sanitation Work in Virginia, has been assigned to duty as Assistant Surgeon General in Charge of the Division of Domestic Quarantine in the Bureau of the Public Health Service in Washington, D. C.

Mr. Rudd Honored.

Mr. Wortley F. Rudd, dean of the school of pharmacy of the Medical College of Virginia, was named by the American Conference of Pharmaceutical Faculties as chairman of a committee to visit Newark, N. J., early in November, to inspect the New Jersey College of Pharmacy, now making application for membership in the Conference. This is the third time that Mr. Rudd has been honored with the chairmanship of a similar committee.

Dr. Ratliff Loses Leg.

Dr. John M. Ratliff, Richlands, Va., suffered the loss of his right leg just above the knee, on November 2, as a result of a train hitting his automobile. The accident occurred in the center of the town. His five-year-old son, who was with him, was seriously bruised. Dr. Ratliff was rushed to the hospital, where his leg was amputated. He also suffered severe lacerations and bruises.

Dr. A. M. Showalter,

Christiansburg, Va., who was quite sick for ten days has improved sufficiently to resume his work.

Dr. S. E. Massey,

Martinsville, Va., has been on a visit to South Carolina.

Johnston-Willis Sanatorium to Have New Quarters.

A permit has been issued to the Johnston-Willis Sanatorium Corporation to erect a proposed new structure at 2900 Kensington Avenue, this city, at a cost of approximately

$250,000. The building will front 165 feet on Kensington Avenue, facing the lawn of the Battle Abbey, and will set back thirty feet from the building line. The building is to be fireproof throughout and will contain all modern appliances, fixtures and equipment. Work will be commenced at once.

Dr. Charles H. Mayo,

Of Rochester, Minn., on his way to attend the Norfolk meeting of the Medical Society of Virginia, as an invited guest, stopped over at Williamsburg, Va., and addressed the students of William and Mary College.

Dr. George E. Barksdale,

Formerly of Richmond, who has been stationed at the U. S. Veterans' Hospital at New Haven, Conn., has been transferred to the U. S. Veterans' Hospital No. 60, at Oteen, N. C.

Dr. Carroll A. Davis,

Formerly of Eagle Rock, Va., has located in Logan, West Virginia, where he will limit his practice to diseases of the eye, ear and throat. He has just completed a twelve months' internship at the Baltimore Eye, Ear and Throat Hospital.

The Roanoke Academy of Medicine,

At its regular meeting held on October 2nd, elected the following officers for the coming year:—Dr. R. M. Wiley, Salem, President; Dr. A. P. Jones, Roanoke, first vice-president; Dr. Everett E. Watson, Salem, second vice-president; Dr. K. D. Graves, Roanoke, secretary-treasurer.

Delegates to the State Society elected at this meeting were Drs. Claude Moore and T. Allen Kirk, Roanoke, with Drs. J. D. Willis and J. R. Garrett, Roanoke, alternates.

CLAUDE MOORE, *Sec'y-Treas.*

Dr. Fred E. Steere,

Who has been located in Richmond, Va., for a number of years, has moved to Claremont, Va., to practice his profession.

Dr. B. R. Caldwell,

Of the U. S. Public Health Service, who has been located at the Army Supply base, Norfolk, has been transferred to Tanners Creek, Norfolk, Va.

The Virginia Tuberculosis Association,

At its annual meeting held in Richmond, October 13, elected the following officers:—President, Capt. W. W. Baker, Hallsboro; vice-presidents, J. Leroy Baxley, Markham, and R. Tate Irvine, Big Stone Gap; treasurer, George W. Call, Richmond; secretary, Dr. Roy K. Flannagan, Richmond. The Executive Committee includes Capt. W. W. Baker, Hallsboro, Drs. Roy K. Flannagan, J. T. Mastin and E. C. Levy, of Richmond, Dr. Wm. F. Drewry, Petersburg, Dr. Charles R. Grandy, Norfolk, and Miss Agnes D. Randolph, Richmond, Miss Randolph being the only new member.

Dr. H. A. Latane, Alexandria, A. Lambert Martin, Catawba Sanatorium, Mrs. F. B. Croxton, director of public health nurses, State Board of Health, and Miss Juanita J. Woods, of the Richmond Instructive Visiting Nurses' Association, were elected to fill vacancies on the board of directors.

Dr. E. C. Levy,

Director of Public Welfare of the city of Richmond, was elected president of the American Public Health Association, at its annual meeting held in Cleveland, Ohio, in October. Dr. Levy has been connected with public health work in Richmond for about fifteen years and has only recently been reappointed as Director of Public Welfare for another term.

The American Electrotherapeutic Association,

At its annual meeting held recently in New York City, elected Dr. Frank E. Peckham, Providence, R. I., president. Dr. Abram Bern Hirsch, New York City, was re-elected recording secretary.

The Southern Surgical Association

Is to hold its annual meeting in Memphis, Tenn., December 12-14, under the presidency of Dr. C. Jeff Miller, of New Orleans. Dr. H. A. Royster, Raleigh, N. C., is secretary of this Association.

The Virginia State Dental Association,

At its annual meeting held in Richmond, the middle of October, elected Dr. W. M. Sturgis, Marshall, president; Dr. C. B. Gifford, Norfolk, vice-president; and re-elected Dr. Harry Bear, Richmond, secretary-treasurer. It was voted to hold the next meeting of this Association jointly with the North Carolina State Dental Association, at Pinehurst, N. C., in May, 1923.

Dr. R. B. Gillespie,

Formerly of Tazewell County, Virginia, has been transferred from Alexandria, La., to U. S. Veterans' Hospital 63, Lake City, Fla.

Dr. P. C. Brittle,

Of Conway, N. C., recently paid a visit to Richmond on business. He was a member of the class of '07 of the former University College of Medicine of this city and has many friends in Virginia.

The Botetourt County Medical Society,

At a meeting held in Fincastle, Va., October 2nd, 1922, elected Dr. E. W. Dodd, Buchanan, president; Dr. J. K. Simmons, Nace, vice-president; and Dr P. K. Graybill, Fincastle, secretary. Dr. M. T. McCulloch, Troutville, was elected delegate to the Norfolk meeting of the State Society.

Dr. C. F. Graham,

High Priest of the Wytheville, Va., Royal Arch Chapter, attended the meeting of the Grand Royal Arch Chapter in Richmond, the latter part of October.

Dr. M. G. Robinson,

King of the Wytheville, Va., Royal Arch Chapter, was also among those who attended the meeting of the Grand Royal Arch Chapter in Richmond, recently.

Dr. J. N. Greear, Jr.,

Of the class of '20, University of Virginia, is serving on the house staff at Manhattan Eye, Ear and Throat Hospital, New York City, for a year, his service ending October 1, 1923. He is making a specialty of eye work.

Dr. B. C. Keister,

Formerly of Roanoke, Va., is again at his late home in Americus, Ga., after a stay of several months in El Paso, Texas.

Dr. and Mrs. Mark W. Peyser

Returned to their home in Richmond, about the middle of October, after a motor trip through Ohio, Pennsylvania and Maryland.

Dr. C. C. Hudson,

Of the Richmond Bureau of Health, spent a week visiting relatives in Kentucky, on his return from the meeting of the American Public Health Association in Cleveland.

Dr. A. J. Hurt,

Chester, Va., has been elected one of the directors of the Chesterfield Fair Association for the coming year.

Dr. John A. Owen,

Turbeville, Va., was a recent visitor in this city, having come as a delegate to the Presbyterian Synod.

Wanted.

January 1, 1923, three (3) full time young doctors for Public Health Work in a large Virginia city. Salary to begin with three thousand ($3,000.00) dollars per year and expenses incident to the duties of the position. State age, place and date of graduation. Address "Health Work" care *Virginia Medical Monthly.* (Adv.)

Wanted.

Young physician qualified to practice medicine in Virginia, who would be interested in an industrial position. Can get in touch with good proposition by addressing "Industrial," care *Virginia Medical Monthly.* (Adv.)

Obituary

Dr. Halbert Porter Harris

Died suddenly at his home in Wake Forest, N. C., October 7, at the age of forty. He was graduated from the University College of Medicine, Richmond, in 1909, and from the Army Medical School, Washington, in 1913. He then served in the medical corps of the Army. On account of chronic nephritis, he was retired with the rank of major six years ago. In spite of this, however, he served throughout the World War, receiving a temporary Lieutenant Colonelcy. Dr. Harris is survived by his wife, who was Miss Jennie Page, of Washington, D. C.

Dr. Robert A. Lancaster,

Columbia, S. C., died suddenly at his home on October 18. He was born in Tennessee 62 years ago but received his medical education in this city, having graduated from the Medical College of Virginia in 1882. He practiced in Richmond for a short time after graduation. Dr. Lancaster is survived by his wife and four children.

Dr. Karl Von Ruck,

A widely known specialist on tuberculosis, died at his residence in Asheville, N. C., November 5, after an illness of several weeks. He was seventy-three years of age and had received his medical education in Germany, later taking a course at the University of Michigan, from which he graduated in 1879. He was medical director of Winyah Sanatorium, Asheville.

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 9
WHOLE No. 846

RICHMOND, VA., DECEMBER, 1922.

20 CENTS A COPY
$2.00 A YEAR

Original Communications

PRESIDENT'S ADDRESS.*

By E. C. S. Taliaferro, M. D., F. A. C. S., Norfolk, Va.

Mr. Chairman, Members of the Medical Society of Virginia, Ladies and Gentlemen:

I am put down on the program, as you will observe, to deliver an address to the medical profession, and to the public, but I cannot dignify my remarks by calling them an address.

Before taking up the subject which I wish to present to you, I first wish to thank the medical profession in the State of Virginia, for the honor which they conferred upon me at their last annual meeting, in Lynchburg. I feel the honor most keenly, and shall always appreciate and look upon it as one of the greatest honors that can be conferred upon any member of the Medical Association, or upon any other man, to be made President of so noble and intelligent a body of men.

I have not come to praise the medical men in Virginia for the great strides and progress which have been made in the medical science during the last two decades; I have not come to tell the public how great and noble a profession we represent; but I have come, principally, to talk briefly upon certain matters that pertain more to the public welfare than they do to the physician. I wish to emphasize one point particularly, which has probably given rise to more misunderstanding on the part of the public than any question which has been presented,—being that of the Medical Practice Act: but, before discussing this, I should like to again emphasize what modern medicine has done, is doing, and will continue to do.

I might classify physicians into two large groups. First: those men who have given their time and brains for the development and thorough understanding of scientific problems. These men do research work, animal experimentation, and study the histology, physiology, and pathology of the various organs and tissues of the human system; finding out the most minute function of each cell, and teaching the co-relation of the whole human system, so as to enable those who practice medicine and surgery to have a clearer and more definite conception of the process of dissolution and repair.

I am aware that many of you, and the public at large, have been opposed to vivisection and animal experimentation, whereby we may determine the cause of diseases, and the cure and prevention of them. Is it not far better to sacrifice the life of a guinea pig, or a rabbit, or a white mouse, than it is to sacrifice the life of a human being? Is it not far better that these experiments be tried out to determine their actual good, than it is to allow man to stumble in the darkness and be unable to solve the mysteries? These conscientious physicians study the prevention of diseases, giving their time and thought, that you may live and be as free from disease as possible. But for this experimental work and study, we would still have with us disastrous outbreaks of yellow fever, typhoid fever, smallpox, and various other contagious or infectious diseases.

The medical profession are standardizing themselves as well as standardizing the hospitals. A few years ago many hospitals were nothing but boarding houses, into which patients were carried, treated, operated upon and discharged, without histories, and frequently without diagnosis made upon them. Today, thanks to the American College of Surgeons and the American Medical Association, this has all been changed. Today the hospital

*Address of the President before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

staffs are elected and not appointed, thereby insuring better men. Today patients are admitted to the hospitals, a careful history is taken which includes previous illnesses, previous diseases, chief complaint, and a thorough physical examination is made, X-ray and blood findings included. Careful charts and records are kept. Progress notes are made daily. The surgical cases are given a preoperative and post-operative diagnosis, and a careful study of the pathological findings is made.

A few years ago, anyone was allowed to operate in a public hospital, whether equipped or not, if he obtained the patient's consent, and the patient was willing to stand the consequences of inexperienced surgery. This has been changed. The hospital boards today require a man, before he is allowed to operate, to show his credentials, his past training, and his experience. At the monthly meeting of the hospital staff all deaths are analyzed. Each doctor must be present and give a strict account of what he did, and why he did it: what medicines were given, and what technique carried out.

Now, why have I explained all this? It is simply because when the Medical Act, requiring a Medical Examining Board of Doctors, was first passed in Texas in 1873, and soon adopted by all the States in the Union, the public looked upon it as a medical trust, that was formed to keep other forms of practice out, but it was not. It was done, purely and simply, to protect the public.

Since that time there have arisen many cults for the practice of drugless healing, rubbing, neuropaths and adjustments, and other different types of quackery. They are men mostly without education or training in the Medical Science. At each session of the Legislature, these different cults present a bill authorizing a Practice Act, whereby they may be enabled to practice their so-called "profession." Can anything be more absurd? Can anything be more disastrous than to turn loose upon the public people who advertise in flaring words, claiming to cure each and every disease by some simple adjustment? Claiming to cure cancer by rubbing, when the medical profession knows, and you know, that by manipulating a cancer you spread cancer cells throughout the whole system? Can anything be more absurd than trying to treat diphtheria by adjusting some nerve, when we know it is a germ disease, and that a dose of antitoxin given in time is a life-saver? Can anything be more criminal than to turn loose upon the public this type of quackery? They advertise that no diagnosis is made, and none necessary. What will be the result? The result will be that the contagion will soon spread, all of the good work in preventive medicine will be thrown away, and the sick will be made worse.

Why has all this come about? Why have these cults developed and thrived for a short time? It has been because of the laxity of the medical profession in failing to teach the public the real prevention and cure, and lack of interest on the part of the public. They have been at a standstill, and have taken no active part in this great and important subject of their health. What is the remedy? Higher education. There should be a Medical Practice Act requiring all who attempt to treat disease, it matters not by what means or method, before they are allowed to study medicine in any form, to be thoroughly educated; that their medical education should consist of all the branches of modern medicine. They should study at least four years in a medical institution, they should be required to serve as an interne in a hospital in Class A. They should be required to stand a rigid examination by the examining board. No matter what branch of medicine they wish to enter, they should all stand a similar examination.

It is time that the medical profession and the public should take definite action in these matters pertaining to the prevention of disease and the preservation of health. Pulling the bars down and turning loose on the public these different forms of quackery will soon have a most disastrous effect upon the health conditions in the State of Virginia.

Many of these men have employed lawyers, who travel from state to state to fight their cases for them, thus pushing down the throats of the unsuspecting public this deception.

It was my duty and pleasure, during the last session of the Legislature, to go before various committees, at different times, in behalf of the Medical Practice Act, and, when conditions were explained, they were always willing to render us such service as they could for the betterment of health conditions in the state, and I call upon you as true American citizens, and as true sons and daughters

of Virginia, to stand by and require the highest education of all those who attempt to deal with health problems.

While demanding that there should be a higher standard of education for those dealing in medical problems, I do not mean to infer that they should be over-educated, or make the bars too high. By demanding an extreme education, I truly believe that it would be a drawback to the country districts, for when a man is over-educated he will not practice medicine in rural districts. Medical education should be, to a large extent, controlled by the state. I mean by this, that it should not be too expensive. There are many poor boys, bright and intelligent, who could study medicine today and be a credit to the medical profession, were it not that the expense of obtaining a higher education is beyond their means. The state should endow its medical schools, equip them thoroughly and make the expense of securing a medical education as low as possible, thereby putting it within reach of the ambitious and intelligent youth who is practically without means and who cannot afford to attend four years in a medical school at the present rate of board and tuition. The academic colleges in the state should give a pre-medical education. By doing this it would probably cut off one year from the medical school.

The subject of medicine has gotten to be a big subject. It is no longer a one-man proposition. We have to have specialists—men trained in certain lines of medical science—and I believe that no man should be allowed to be a specialist on any subject until he has had a thorough training on all lines, and has had two or three years in general practice. The surgeon should be thoroughly trained in diagnosis and in internal medicine, and should be enabled to differentiate medical cases from surgical cases. He should not be a mere carpenter and operate solely upon the advice of the internist. The internist, on the other hand, should have a thorough knowledge of the surgical subjects. He should know good surgery and a good surgeon when he sees one. He should visit the operating rooms and study living pathology. The genito-urinary specialist should have a thorough knowledge of skin lesions; in fact should be a specialist upon skin diseases as well as upon his special branch. The neurologists must have a clear conception of the internal secretions, and in fact of every branch of medicine. The public should differentiate between a good doctor and a poor one. All doctors should visit clinics every year, join a reading club and have a free and open discussion of all subjects pertaining to medicine.

I do not believe there is a single member of the Medical Society who is illegally prescribing whiskey, but, if he should be breaking the Volstead Act, he should be admonished of his error and, if he continues to do so, the Society should take a firm stand and expel the member.

The Society has always taken an active part in the campaign for the prevention of cancer. At the last annual meeting they appointed a committee on cancer, and I hope that they will bring in their report at this session.

Before closing, I wish to thank all of the officers and members of the Society for their loyal support and their wonderful help during the last twelve months.

New Monroe Building.

A CONSIDERATION OF DEFICIENCY DISEASES: DISEASES RESULTING FROM FAULTY DIETS.*

By JOSEPH GOLDBERGER, Surgeon, U. S. Public Health Service, Washington, D. C.

Of the advances in science that in history will mark the first quarter of the twentieth century none is of more fundamental importance to mankind than those in the domain of chemistry by the application of which an animal may be successfully fed on a synthetic diet throughout the normal span of its life.

As is well known, it was long believed that protein, carbohydrate, fat, inorganic salts and water were the essential dietary components. Singularly enough, however, all attempts to carry this belief into practice by feeding experimental animals on such purified nutrients sooner or later ended in failure. This led to the suggestion being put forward, first by Lunin (in 1881) and later, independently and more definitely, by Hopkins (in 1906) that there must be dietary factors other than these basal constituents.

These suggestions which, curiously enough, attracted very little attention at the time, had their origin in purely biochemical studies of

*Opening paper presented by invitation in a symposium on "Nutritional (Deficiency) Diseases" at the meeting of the Medical Society of Virginia, in Norfolk, October 31-November 3, 1922.

nutrition. Contemporaneous with them, studies were in progress in the domain of pathology the results of which pointed to exactly the same thing, for the investigations starting with and stimulated by the pioneer researches of Eijkman (1897), of Grijns (1901), and of Braddon (1907) in beriberi, and of Holst and Froelich (1907) in scurvy, indicated quite clearly that these diseases were intimately associated with diets lacking some unknown factor.

It is almost exactly ten years ago that Funk advanced the view that the diseases beriberi, scurvy, pellagra and possibly rickets constituted a group of "deficiency diseases," the primary etiological factor in each of which is a deficiency in a substance of a new class named by him vitamin. The experimental proof that converted this hypothesis into fact, so far, at all events, as beriberi and scurvy are concerned, is the fruitful result of the researches of the very recent past. As a result it is now accepted that beside the food factors known of old there are essential for mammalian nutrition at least three others now commonly referred to by the name suggested by Funk.

Doubtless by reason of their novelty and their mysterious character the vitamins have attracted an extraordinary amount of attention, both from the profession and the laity. Indeed, so much has this been the case as to make it almost seem as if these were the only dietary factors of importance, and to have led many hastily to assume that any and all nutritional disturbances, or disturbances only suspected of a nutritional origin, must be due to deficiency in factors of this class.

The purpose of this paper is to point out briefly the essential nature of the so-called deficiency and related diseases and to invite attention to the need of a broader conception of these than now commonly obtains. Time will not permit much detail nor the consideration of other aspects of these disturbances such as their relation to the endocrines, an aspect, by the way, that tends to invoke discussion of a volume inversely proportional to the mass of fact at hand.

It will be helpful to an understanding of the "deficiency diseases" to, first of all, consider briefly some of the more outstanding characters of the substances the existence and need of which have only just been recognized.

It has already been mentioned that the existence of three vitamins is now well recognized and accepted. These are specifically designated as vitamin-A, vitamin-B, vitamin-C, respectively. Within the past few weeks evidence has been brought forward by McCollum and associates of the existence of a fourth which, if confirmed, will, under existing nomenclature, be designated as vitamin-D.

These complexes are widely but quite unevenly distributed among our natural foodstuffs. Thus, to consider a few typical examples,—the whole corn kernel contains considerable vitamin-B, a little vitamin-A but no vitamin-C; the ordinary dry legume seeds, beans and peas, are very rich in vitamin-B but are devoid of both -A and -C. Spinach is reported to contain some vitamin-B and much of -A, while raw cabbage and tomatoes contain all three but are particularly rich in -C.

Originating primarily by synthesis in plants the vitamins are present in animal tissues and secretions, with rare exceptions, only as the animal secures them in the food, herbivores directly and carnivores indirectly, from the plant. In animal, as in vegetable foods, the distribution of these essentials is very uneven, the efficiency of the different organs and tissues as reserve depots apparently varying markedly. Milk has been found to be notably rich in vitamin-A but to contain relatively only moderate or only small amounts of -B and -C; muscle meat contains all three vitamins, but in very small amounts; whereas such organs as the liver and kidney are very rich in both -A and -C and only moderately supplied with vitamin-B. It is of great practical importance to recognize that this naturally occurring inequality is frequently accentuated and greatly modified by the treatment (milling, heating), to which many of our foods are subjected and which has arisen as a result of the practical necessities of distribution and marketing of present-day civilization.

Chemically still unidentified, the vitamins are recognizable at present only by the pathological results of their withdrawal or absence from the diet. An inadequate supply of any one of them is followed by disturbances shown in experimental animals by a more or less marked reduction in appetite, retardation or cessation of growth, and, sooner or later, nutritive failure. Besides these general symp-

toms, an inadequate supply is also followed by certain effects more or less distinctive of each, —thus, deprivation of vitamin-A, if of sufficient degree, may lead to ophthalmia, the xerophthalmia of McCollum; of vitamin-B, to nerve degeneration with disturbed sensory and motor nerve function and symptoms of polyneuritis; and deprivation of vitamin-C to hemorrhages, particularly subperiosteal and along muscle sheaths. Vitamin-D, if it be not premature to so designate it, is concerned in calcium metabolism. A deficiency of this substance in connection with a faulty calcium-phosphorus ratio in the ash of the diet when coupled with inadequate sunlight leads to disturbance in calcium deposition in growing bones.

The syndromes thus resulting in animals are the analogues respectively of keratomalacia, beriberi, scurvy and rickets in man. Incidentally, it may be remarked, in view of the continued agitation in some quarters against animal experimentation, that our knowledge of the etiology of these diseases of man, so long obscure and perplexing, is now solidly founded on the results of experimental study of the corresponding condition in animals. And the possibility of substantial further progress depends directly on the possibility of further animal experimentation.

Let us now consider these diseases individually with respect to the dietary factor specifically concerned in their etiology. The dependence of keratomalacia or vitamin-A deficiency is so well established by recent studies that discussion of it at this time would seem to be unprofitable. Reference may well be made, however, to a clinically similar eye condition in rats recently described by McCollum and associates found to be due not to vitamin deficiency but to a faulty mineral balance, particularly with respect to chlorine and sodium. The possibility that an eye condition may occur in man analogous to this newly discovered one in rats makes this of importance to the clinician.

Beriberi and scurvy are the classical types of vitamin-deficiency diseases. The former arises as the result of a deprivation of vitamin-B, the latter of vitamin-C. The occurrence of the former has most commonly been associated with a diet in which white, highly milled rice was an unduly large element; the latter with a diet in which fresh vegetables formed an unduly small element. All this is now so well known that simple mention of these broad, general facts is all that is called for.

The status of rickets as a vitamin-deficiency disease is, however, on quite a different footing. Mention has been made of the fact that a factor, probably of the nature of a vitamin, which may tentatively be referred to as vitamin-D, may play a part in the development of this disease but it should here be made clear that this relation differs in a fundamental respect from that which obtains between vitamin-B and beriberi, or of vitamin-C and scurvy. In rickets the part played by the vitamin—if such should indeed prove to be the nature of the factor—is not, as in beriberi and scurvy, under all circumstances an essential one. In rats, at least, it appears to be needed only, as has already been mentioned, when there exists a faulty balance between calcium and phosphorus in the diet and then only in circumstances of insufficient sunlight. Indeed, some students of the disease regard this insufficiency of sunlight as the fundamental factor in the origin of the disease, basing themselves largely on the fact that the greatest incidence of the disease is in the late winter and early spring, that is, at the end of a season of reduced sunlight. But the absence of the disease in certain northern latitudes (New Hebrides) under circumstances of but little light during long seasons, the greater incidence in artificially than in breast fed children, together with the experimental evidence now at hand, point in our judgment, to diet rather than to light as the primary controlling factor. In either case, however, it is clear that rickets can not properly be considered a vitamin-deficiency disease. And what has been said of rickets probably applies fundamentally equally to osteoporosis and to the hunger-osteomalacia observed since the war in Austria.

Besides the diseases that have been so far considered a number of others have from time to time been mentioned as dependent on vitamin-deficiency. Among the most conspicuous of these are tropical sprue and pellagra.

There is much to justify the opinion long held by some observers that an important relation exists between diet and sprue. Perhaps most significant in this connection is the high esteem in which the dietary treatment of this

disease is held by practitioners in the tropics. There is practical unanimity among them as to the outstanding value of a diet of milk or meat, or of a combination of these with fruit, particularly strawberries. But even if it were justifiable to accept this as proof of a close relationship and indicative of dietary deficiency, one could hardly do more, on the basis of the meagre evidence at hand, than guess as to just what specific dietary factor or factors are involved. If we were to venture a guess, the striking resemblance of its symptoms to some of those of pellagra would lead us to suggest that the etiological dietary factors in sprue may possibly prove to be of a nature similar to those in pellagra. In connection with sprue, passing reference may be made to "Coeliac Disease," a condition in children first described nearly fifty years ago by Samuel Gee and quite recently carefully studied by Still. Clinically, it resembles sprue in several striking respects but the etiological factors are so obscure that little more can be said than that it is not unreasonable to expect that the condition will prove to be of dietary origin; it is pure speculation, however, to talk of vitamin-deficiency in relation to it. This applies with even more force to another even more obscure condition in children, reported in this country in the last year or two under the name "acrodynia" (Weston), and "pellagra-acrodynia" (Byfield), but in all probability identical with the "erythroedema," first described in Australia about eight years ago (Wood). Much careful study, clinical, epidemiologic and dietary, of all these conditions will have to be made before even their broad dietary relationship can be postulated other than most tentatively.

The relation of diet to pellagra was, until quite recently, as obscure and doubtful as it still is to sprue. But the results of investigations carried on during the past seven or eight years have gone far towards clearing up this well-nigh two century old problem.

Evidence has been brought forward which indicates that diet operates as the dominating factor in controlling the clinical course and outcome of an attack of this disease. Furthermore, the results of experimental feeding on a considerable scale of pellagrous children in orphanages and of pellagrous insane in a hospital for insane warrant the conclusion not only that diet controls the course of the immediate attack but also that the clinical recovery thus brought about continues and no new cases develop so long as a proper diet is maintained, and this without the intervention of any other factor, hygienic or environmental. This pellagra-preventive effect of diet, it may be noted, is represented not merely by a more or less marked lowering of incidence but actually by a complete disappearance of the disease. In this respect it has striking analogues in such diseases as beriberi and scurvy, in which the same notable phenomenon has long been well known.

Just as in treatment and prevention, so directly in the causation of pellagra the available evidence points to diet as the controlling factor. Considering only the direct experimental evidence we find that all reported attempts to induce the disease by means other than diet have failed, whereas in a controlled human feeding experiment with a diet the outstanding character of which was a protein supply derived almost entirely from a mixture of cereals—maize, wheat and rice—not less than six of a group of eleven men who submitted to it developed the disease (Goldberger and Wheeler).

Since an adequate increase or a liberal addition of milk and lean meat to a pellagra-producing diet, without other modification, will prevent the occurrence of the disease, it is thus clearly suggested that in pellagra we have the manifestations of a dietary deficiency. With respect to the dietary factor primarily concerned in this deficiency the evidence has for some time increasingly tended away from vitamins, and, as we shall presently see, some observations recently made by us (in association with Dr. W. F. Tanner) well-nigh, if not absolutely, eliminate the known vitamins as essential factors.

In the course of our study of the prevention of pellagra in a section of the Georgia State Sanitarium, we noted the occurrence of a number of cases of the disease in individuals who, during a period as long as three or four months before the onset, had daily consumed a diet the vitamins in which were derived from almost every known class of vitamin-rich foods, including cod liver oil and baker's yeast, that in the aggregate must have supplied an abundance of these complexes. This diet is believed to have afforded also a liberal supply of minerals since it included a supplement of

mineral solutions yielding approximately the mineral elements of the ash of a liter of milk. Under these circumstances it would seem permissible to exclude known vitamins and minerals, thus leaving but protein for consideration as the essential primary factor involved in the deficiency.

This interpretation is very greatly strengthened by the indications afforded by another case recently observed by us (in association with W. F. Tanner). This was in a colored patient who developed an attack of pellagra after three months on a diet which, so far as could be judged, was so constituted that, if faulty, the fault was most probably connected with the protein which was derived practically exclusively from 24 ounces of milk. After nearly three weeks of a progressive development of symptoms a preparation at first of calcium caseinate, later of a high grade casein, was added to the diet, and the fresh milk replaced by an equivalent volume of skim milk in powder form, thus bringing about, significantly, only an increase in the protein. This modification was followed by prompt clinical improvement although the previous progress of the case and experience with some other similar cases had impressed us that no amelioration of symptoms was to be expected without an appropriate change in diet.

The indications are therefore very strong that the dietary deficiency is one involving not vitamins and minerals but protein, and, since the present-day conception regards protein as a complex of amino-acids, that it is some amino-acid deficiency that constitutes the primary specific factor* in pellagra. We have here, in all probability, therefore, a type of deficiency disease fundamentally different from that represented by beriberi or scurvy.

It thus becomes evident that the conception of deficiency diseases must be extended to include this new type represented by pellagra. But recent developments in our knowledge of another disease, one which ordinarily is scarcely thought of in this connection, seem to us to suggest that this extension should be carried still further.

The etiology of endemic goitre has long been obscure but the work of Marine and associates seems to us to indicate with increasing clearness that this condition arises primarily from an inadequate ingestion of iodine. Marine's demonstration in school children of Akron, Ohio, confirmed by Klinger in Switzerland, that this condition can easily be prevented by the administration of a small amount of sodium iodid appeals to us as in the highest degree suggestive, if not entirely conclusive. But whether this view of the etiology of endemic goitre is as yet entirely acceptable or not, it nevertheless serves to indicate that serious consideration must be given to the possibility, if not the probability, that deficiencies in the mineral factor in diet may give rise to more or less specific pathological conditions in man.

Accordingly, it would seem advisable to further extend the conception of deficiency diseases so as to include those due to mineral deficiencies, of which endemic goitre may, at least tentatively, be regarded as a type.

This broader conception would thus include all of the diseases that we have seen to be dependent on deficiency of an essential dietary factor. It does not, and, in the light of the evidence at hand, should not include rickets, for, as has already been pointed out, if we accept the dietary view, this arises primarily not from a deficiency but from a faulty balance of the mineral elements of the diet. As we see it, then, we have in rickets a disease of dietary origin, which is related to the deficiency diseases but is not strictly one of them. This suggests the desirability of a grouping broad enough to include the dietary deficiencies and also such related diseases as rickets. Fundamentally all these conditions, including rickets, arise in consequence of faulty diets and it would thus seem entirely rational to bring them together on this basis as diseases arising from faulty diet.

Such broad classification appeals to us as having rather important advantages. In our review of the individual diseases arising from faults in diet, reference was made only to the primary distinctive dietary factors, but this is not to be understood as indicating that other dietary factors are never involved. Quite the contrary is certainly frequently the case. This may be deduced from the newer knowledge of the dietary properties of our foods which indicates that a diet faulty in one respect is almost certain to be defective in some degree in other respects, and is borne out clinically by the occasional occurrence of cases in which there

*This does not exclude the possibility, indeed the probability, that other factors, dietary and non-dietary, may (perhaps frequently do) operate either to accelerate or to retard the action of this primary factor.

may be observed an association of scurvy with rickets, of scurvy with beriberi, of pellagra with beriberi, or of scurvy with pellagra. It follows, therefore, that almost always the diet associated with a specific clinical condition, whatever it may happen to be, may be expected to be faulty not only with respect to the factor that gives the clinical entity its distinctive character but, in some degree, also with respect to one or more other factors. Such condition is therefore more accurately described as a disease of faulty diet than as a deficiency of this, that, or other factor even if all the defects were of the nature of deficiencies.

This broader classification avoids the implication that otherwise may appear to be suggested, that the primary specific factor is the one exclusively concerned in bringing about the clinical condition as it actually presents itself. It thus permits of a more ready appreciation of the fundamental importance of a diet adequate in all respects, for it tends to suggest that in dealing with such diseases attention must be given not alone to some one specific factor but also to the make-up of the diet as a whole.

In closing, it is desired particularly to emphasize one thing that emerges from this discussion, namely, the dominant importance of a properly constituted diet. Such a diet is essential not only in treatment and prevention but also in the promotion of the highest physical development and vigor of which the race is capable.

Hygienic Laboratory.

PEDIATRIC ASPECTS OF NUTRITIONAL DISEASES.*

By LAWRENCE T. ROYSTER, M. D., Norfolk, Va.

It would be well to state in the beginning what diseases or conditions are considered at the present moment as proved to be due to a food or food factor deficiency, and which ones are probably of analogous etiology, though still *sub judice*. Those conditions concerning which the authorities agree positively as being of deficiency origin are scurvy, beriberi, xerophthalmia and keratomalacia (probably different clinical aspects of the same underlying condition). Those concerning whose etiology opinion is yet divided, in which positive proof is lacking though strongly in favor of deficiency, are pellagra, acrodynia, rickets, with its closely allied spasmophilia and tetany; while the single outstanding classical condition which represents the truest type of deficiency disease, though not a food deficiency, is cretinism. We must not lose sight of the faulty development and early decay of the teeth, which we are coming more and more to recognize as a manifestation of malnutrition at some time between conception and their eruption; in fact, in many instances they furnish us the only clue to an underlying malnourished state.

I shall review briefly the clinical manifestations of each of these conditions, emphasizing particularly the difference between the symptoms in the adult and the child, and dwelling at some length only on the ones which are of interest to us in this particular section of the country. The order in which I have mentioned these conditions will therefore be disregarded in the general discussion.

Beriberi is a disease of proved deficiency origin, though it does not always develop on the same gross diet. This is shown by the fact that while it is most frequent in China, Japan and certain insular localities where the diet is more or less similar, it has been seen in Scandinavia, Labrador, and in epidemic form in asylums and other institutions in the United States. Whenever it occurs, however, there is a demonstrable deficiency in the water soluble B vitamin. The manifestations in the adult and in children do not differ materially, and it is not of sufficient interest to those of us living in this section of the country to justify a discussion.

Pellagra. Though most frequently seen in the adult, this condition is by no means rare in children. It is rarer in infancy, though it does occur, even in the breast-fed, and after the second year is common enough to be considered with children's diseases. It is quite prevalent in the Southern states. In this section, however, I have personally never seen a case. The warm months of spring, summer and early autumn furnish most of the cases. The etiological factor is probably a food deficiency—more specifically a protein deficiency. A prolonged carbohydrate diet, or at least one poor in proteins, appears to be provocative. When it occurs in infants it is

*Read as part of the symposium on "Nutritional (Deficiency) Diseases" at the meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

usually the nursing infant of affected mothers; though instances have occurred in which non-affected mothers have infants who are pellagrous.

There is some disagreement still among the authorities as to the exact nature of pellagra —a few still leaning to the infections nature, though the weight of authority is undoubtedly on the side of an unbalanced diet. No vitamin, however, has been proved a definite factor. Clinical manifestations are practically those seen in the adult. The eruption is first seen on the extensor surfaces of the extremities, then becomes more or less general. This eruption is of such a nature in the early stages that it is often mistaken for sunburn, especially when it occurs in the warm months; it rapidly becomes scaly, however, and eventually exfoliates large, dry scales. This is not universally the case; sometimes bullae are seen. The eruption is symmetrical and sharp in outline except when receding, and it usually leaves a brown discoloration of the skin. The child shows the same type of disturbance of the digestive tract as the adult. The gastric manifestations are exceptional, while the intestinal ones are quite characteristic. Diarrhea is the rule—either continuous or alternating with constipation. The diarrhea is either simple or mixed blood and mucus. The nervous manifestations, beyond restlessness and fretfulness, are rarely so marked as in the adult. I have no doubt that pellagra when mild is often overlooked, and that even in our section occurs with greater frequency than we realize.

Acrodynia. The exact etiological position of this condition has not been determined. The weight of opinion is on the side of deficiency, though there are those who still hold to the infectious theory. Opinion also differs as to whether this condition is a variant form of pellagra or is a distinct entity. This was early described under the title "Erythredema," and this is probably the best name for it. The manifestations are striking—loss of appetite and listlessness are constant. In certain groups there is a striking incidence of infection of the respiratory tract, while in others there is no such infection apparent. Loss of weight is usually the rule. Reflexes are diminished (probably exaggerated early). Profuse perspiration is almost universal at first, and this results in maceration of the skin. The irritation causes violent scratching. The hands and feet are cold and bluish red. The characteristic symptom, as stated by patients who are old enough to express their feelings, is the complete perversion of sensation in the hands and feet,—when walking on a rough surface the sensation is that of velvet, and *vice versa*. Photophobia with red conjunctivae is marked, and there is a characteristic area of necrosis of the buccal surface, usually opposite an erupting tooth. The hair is shed, teeth fall out, and there are changes in the nails. Diagnosis may be difficult in the early stages from scarlet fever; later it may be suggestive of pellagra; at all times it may be mistaken for beriberi. Certain writers have described this condition as a variant form of peripheral neuritis. No vitamin has as yet been proved a determining factor; and no definite type of food has been shown to be even suggestive etiologically, though a well balanced diet is essential to cure.

Xerophthalmia and Keratomalacia, long considered infectious in origin, have been proved to be due to a lack of a fat soluble A vitamin. This condition may come on in the course of any deficiency disease, may come on without any evidence of the presence of one of the deficiency diseases, or may come on as the only manifestation of malnutrition. When the diseases have not advanced too far they are cured by the administration of codliver oil, and uniformly prevented by its administration. They are not very common in this country, but in Japan there have been as many as 1,200 or 1,400 cases in a single outbreak, where it is described under the name "kikan."

Rickets is one of the conditions of childhood with which we are most frequently confronted, and one which perhaps furnishes as many patients to the physician dealing exclusively or in part with young children as any other condition known in the temperate zone. The frequency of rickets is variously estimated by different observers. The most recent observers place its incidence in breast-fed infants at about 50%; while among the artificially fed children the figure closely approximates 95%. Its position in relation to etiology is as yet not definitely determined—one group of observers holding entirely to the food deficiency theory, while another places it among those caused by unsanitary conditions. (Vitamin D?) The most pronounced cases seen along the Atlantic seaboard are in the Negro and Italian races, both of which imme-

diately or remotely have been transported from a sunny clime where most of the life is led out of doors, to one which, at least during the winter months, requires close housing and a good deal of artificial heat. However, this condition is not limited to these races, but, to a large extent, sometimes detectable only by X-ray or the presence of a very slight rosary, it is becoming well nigh universal. We are all quite familiar with the type of advanced rachitic infant. From the fourth or fifth month up to the first year we see this infant with large, square head, ribs beaded, enlargement of the epiphyses, which is symmetrical, and curvature of the bones. Early symptoms, and ones which should attract the attention of the examining physician at once are sweating of the head, which is often flattened, constipation and craniotabes. The fontanel is late in closing. Etiologically, as has been stated, the condition is not fixed. One thing is certain, that there is marked disproportion in the blood serum in the normal calcium-phosphate ratio. Normal bones contain two-thirds inorganic and one-third organic constituents. This proportion is reversed in marked rickets. In experimental work, rats and dogs acquire rickets readily when fed a diet either deficient in calcium-phosphate, or one in which the proper calcium-phosphate ratio is not maintained. This is particularly noticed when the substance contained in codliver oil is not administered at the same time; and that rickets will not develop if the ratio is properly maintained, even if there is a deficiency of the substance contained in codliver oil. These experiments would certainly tend to prove that it is a dietary condition, and probably belongs to the class of true deficiency diseases. And yet, when we take into consideration further experiments that sunlight, even without the administration of codliver oil, will effect a cure in rickets, or even exposure to a carbon arc lamp, we are led to believe that hygienic conditions play as important a role as food itself. It is not at all unlikely that a combination of these factors is at fault. It is quite possible that the organic salts are deposited in the bone in the presence of sunlight, or the equivalent artificial light, which would not be deposited if these two are deficient, and that in all probability the continuance of the patient in a strictly hygienic environment might prevent the development of rickets even in the face of the deficiency of certain food elements. Recent investigations have shown in a certain number of cases where infants showed varying degrees of rickets, that the diet of their mothers was deficient in the calcium-phosphate ratio. It is quite certain that a combination of sunlight and codliver oil will cure rickets. This, however, does not relieve us of the responsibility of having the child fed properly, on a well balanced diet, and the mother's food during her pregnancy and period of lactation carefully watched and balanced with as near scientific accuracy as practicable.

Closely related to, if not invariably associated with rickets, are Tetany and Spasmophilia—different clinical manifestations of the same underlying conditions. These may or may not be food deficiencies, but since they are calcium deficiencies and are relieved by the administration of calcium, they should be considered in this connection. A striking feature of the appearance of these conditions is that they do not occur in cases of rickets presenting marked bony deformities, but do occur where deformities are slight (calcium-phosphorus ratio). In frank tatany we have a general spasticity of the body with a very apparent carpo-pedal spasm. In spasmophilia, there is, as the name implies, a marked tendency towards convulsions. It is entirely probable that a child who has convulsions in the presence of fever or digestive disturbances is a victim of spasmophilia, especially where the convulsions are of long duration or of frequent occurrence.

In addition to these manifestations we have laryngismus stridulus, breath-holding spells, and the like. Chvostek's sign and the peroneal reflexes are usually, though not invariably, present; while Erb's sign—response of muscles to low galvanic current—is practically always demonstrable. These symptoms if severe may be relieved by the hypodermic injection of magnesium sulphate. They are cured by the administration of calcium chlorid or codliver oil. Of course it is evident that a well balanced diet should be instituted and maintained.

Scurvy represents the only type of deficiency disease which can be positively prevented and entirely cured through regulation of diet alone. Identity of adult and infantile disease has long since been established. Certain dif-

ferences in the clinical manifestations are due to the reaction of the disease to the two kinds of tissue. To briefly outline the symptomatology in the adult:—there is usually first a change in the complexion—it is first sallow or muddy; there is loss of vigor, the subject becomes somewhat indolent, tires easily, is frequently out of breath. Fleeting pains in the joints and extremities are at least the cause of discomfort. Loss of weight does not occur. The gums become congested, spongy, hemorrhagic, while petechiae develop in the skin, especially around the hair follicles, the size of these varying from a discrete pin point to coalescing blotches. There is frequently nose bleed, and the eyelids are swollen. Constipation during this stage is the rule. All of these signs and symptoms gradually but steadily increase, and palpitation supervenes; the gums become more spongy and hemorrhagic, and if there is an infection or many carious teeth the breath becomes foul. The teeth loosen, and subcutaneous and submucous hemorrhages increase. Bloody diarrhea which takes the place of the early constipation sets in. Hemorrhages in the deeper muscles occur, and there may be brawny swellings which are tender. The appearance of this is often the first manifestation of the disease. Hemorrhages likewise occur in the sheaths of the tendons (notably the achilles). Sometimes there is a diffuse hemorrhage of the popliteal space. Edema of the ankles which does not pit, but on the other hand causes glossiness of the skin, is frequent. Some authorities state that follicular hyperkeratosis is the most frequent early sign. Subperiosteal hemorrhages are the rule, accompanied by pain and tenderness. They occur in almost any location, but are more frequent in the femur, tibia and jaw. Death may be due to sudden syncope from heart weakness, or from the pouring out of fluid in the pericardium, or from secondary infection or pneumonia.

In infants and young children the same underlying pathology exists, and the same changes as those already described, though not usually in the same order, nor in the same severity for each symptom. The acute florid type of scurvy is quite familiar. The child lies on its back with thighs and legs flexed and everted; it is exceedingly tender to the touch; usually a lump or mass appears along the shaft of one of the long bones of the extremities. This is frequently diagnosed paralysis, rheumatism or osteomyelitis; the last due to the fact that temperature is not infrequently very high in scurvy. In addition to these symptoms, almost invariably where teeth have erupted the gums are swollen, spongy and hemorrhagic. In the subacute form we usually have a child six to twelve months old with either a very slight gain or stationary weight, fairly well developed and nourished but pale, and frequently showing edema of the upper eyelids; appetite is poor and the child is irritable; the gums are livid and show evidence of peridental hemorrhage. These last may be so transient as to escape notice unless the child is under constant observation. There may be present the crimson line of Still. The papillae of the tongue are frequently enlarged; the frenum may be hemorrhagic. There may be subconjunctival hemorrhage in one eye. The thighs are often tender, either constantly or fleeting. A non-pitting edema of the tibia may appear, and the knee jerks are usually exaggerated. The urine often contains a trace of albumin with a few blood cells. The pulse is rapid and becomes irregular; the respiration is almost always rapid. Not infrequently there is a steady gain in weight, and the appearance of scurvy may not be definitely determined except on the X-ray.

Latent Scurvy. The symptoms of this condition may be very indefinite. We usually have a history that at about the 6th month the child began not to thrive well; the pulse is apt to be rapid and the knee jerks are exaggerated. Through history of the diet we are apt to make a correct diagnosis. The child has usually been fed on pasteurized or condensed milk over a long period, to which has possibly been added cereal. The latent form is exceedingly important, and often overlooked.

There are certain symptoms that are not characteristic in any one of the types described, but may be present in any one. Distinct hemorrhages may occur in the sheath or body of the muscles. The skin instead of having petechial hemorrhages may have diffuse hemorrhage, as also the mucous membrane. There may be proptosis, which is due as a rule to a hemorrhage in the orbital cavity, or more rarely to edema of the tissue surrounding the eyeball. Beading of the

ribs is not uncommon, and is naturally often mistaken for rickets. In the scorbutic beading, however, this is irregular and abrupt. Separation of the epiphyses may occur. Rarely the joints may be involved. Hemorrhages may occur in the membranes of the brain and lead to corresponding nervous manifestations.

Etiology.

Scurvy is almost universally a disease of the bottle fed baby, or in cases where the breast feeding has been continued only a few months. Sometimes where the quantity of breast milk is sufficient the quality may be poor, due to the faulty diet or malnutrition of the mother. It usually occurs in babies fed on pasteurized or condensed milk, or those on malted milk or other products which are not mixed with fresh cow's milk. It is due especially to a lack of the water soluble C vitamin. At least 1 pt. of fresh cow's milk per day is required to prevent scurvy in an infant, and this in cases where the milk is rich in vitamin content; where the milk is poor in vitamin it requires as much as a quart.

The food of the cow or nursing mother appears to be the determining factor in the quantity and type of vitamin contained in the milk produced. Prolonged slow heating, such as pasteurization and the process employed in condensing milk appears to destroy a large amount of the vitamin content, as is also the case when aging takes place. Rapid heating, such as boiling, and evaporation as used in the preparation of powdered milk, especially when the milk is subjected to these two processes while fresh, that is, within six hours of milking, appears to impair the vitamin content very little if at all.

The diagnosis of scurvy from purpura often presents a real difficulty, but can usually be cleared up by a count of the blood platelets. These are usually increased well beyond the normal limits in scurvy and diminished below the normal limits in purpura.

It would appear, therefore, in light of these recent studies that it is of vast importance to the growing child that it be supplied continuously with a well balanced ration, not only for the needs of growth and development, but also because we do not as yet know what bearing the food of childhood has on the state of nutrition in adult life: more particularly on the incidence of deficiency diseases.

All deficiency diseases are not invariably isolated in incidence, but two or more are frequently associated in the same individual. This fact, and the further fact, that they are almost always preceded by a state of malnutrition, not always demonstrable by the scale, is responsible for the later appearance of a definite syndrome, called by the name of one of the deficiency diseases, and dependent on which food or food factor has been most lacking in the diet. We are led inevitably to the conclusion that in deficiency diseases, as well as in infectious diseases, prevention is of more value than cure, and that the prevention as well as the cure in this instance depends on a well balanced diet.

Taylor Building.

ORTHOPAEDIC ASPECTS OF NUTRITIONAL DISEASES.*

By THOMAS WHEELDON, A. M., M. D., and JOHN BLAIR FITTS, A. B., M. D., Richmond, Va.
Associates in Orthopaedic Surgery, Medical College of Virginia.

We would have described rickets, reviewed scurvy and mentioned beriberi as our part of this symposium had we not been present at the meeting of the American Orthopaedic Association in Washington last May. There Dr. Robert Osgood, in discussing Dr. Shipley's paper on rickets said that osteomalacia is a deficiency or a hunger disease and if osteomalacia is included, Paget's disease must be also. These five, then, will be taken up, starting with beriberi as the orthopaedist probably has least to do with this.

Beriberi.

Beriberi in its various forms produces pain and loss of power in the limbs, a lowering sensibility of the legs, with the occurrence of paraesthesia and oedema. The usual methods are used in treating the neuritis; salicylates and saline laxatives are used in Japan. When oedema has subsided, massage, passive movements, and graduated exercises are used in treating the atrophied muscles.

Scurvy.

Scurvy produces arthritic symptoms which may at first be taken for rheumatism. The child shows evidences of discomfort when certain joints, usually of the lower extremities,

*Read as part of the symposium on "Nutritional (Deficiency) Diseases" at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

are moved, and as the disease progresses he may scream whenever he is turned or lifted. The painful joints are sensitive to pressure and they may be somewhat enlarged, but local heat and redness, as well as fever, are, as a rule, absent. In extreme cases, the swelling about a joint due to effusion of blood and accompanied, it may be, by separation of the epiphyses may be mistaken for the symptom of infectious epiphysitis or even for sarcoma. The enlargement may be confined to one of the bones forming an articulation. The thickening is due to periarticular or rather subperiosteal hemorrhage, and the joint itself is not usually affected though hemorrhage may occur.

Orthopaedic treatment consists of keeping the patient completely at rest and for this a gas-pipe stretcher frame, over which canvas is tightly drawn, is used. By this means, the child may be kept at all times in the proper position, and, at the same time, can easily be moved about without being disturbed.

Osteomalacia.

Osteomalacia lies in debatable ground. By some, it is considered to be a process somewhat similar to rickets in causing softening of the bones, the etiological and pathological relation of which to rickets is imperfectly formulated but the pathology of which is different from that of rickets. Whitman declares that it is a disease of an inflammatory nature, while Osgood, as we saw above, definitely places it among the deficiency diseases. Probably, after all, Lewin will eventually settle this argument for us, as he has written an excellent paper on both osteomalacia and adolescent rickets, of which we shall say more later.

Grossly, there is an absorption of the lime salts, beginning in the marrow and affecting first the spongiosa. Osgood believes that there is at first a decalcification of the bony tissue, that the calcium is in part replaced by magnesium but probably chiefly by an organic substance rich in sulphur, poor in phosphorus, similar to, but not exactly like, the normal matrix. At any rate, the resistance of the bone is so impaired that it bends or breaks.

The disease, one of adult life, usually begins insidiously, the first symptoms being dull aching and perhaps tenderness of affected parts and pain on motion referred to the pelvis and the thighs. Walking and sitting produce discomfort. This is, as a rule, supposed to be of a rheumatic nature until the weakness and deformities of the limbs make the character evident. The bones of the trunk are the ones most often involved although bowing of the arm and thigh with complete or incomplete fractures is seen. The cranial bones are seldom affected. An interesting point in connection with this is that the patient is shorter after having been up for a while: for instance he may be high enough to be able to see to shave in a certain glass in the morning, but not in the evening. Treatment is mainly general. If the process is arrested, existing deformities may be corrected in the same way that the same type of deformities are corrected in rickets, to be described later.

Paget's Disease.

The most complete metabolic studies of osteitis deformans have been made and described by Bergeim and Hawk. Their investigations revealed a decided retention of calcium, magnesium and phosphorus, and a pronounced loss of sulphur. Their findings were interpreted to indicate a stimulated osseous or osteoid formation, accompanying the absorption of a highly sulphurized organic matrix. In advanced osteitis deformans, the first step in the new formation of bone osteoid tissue may be the reduction of a highly sulphurized organic matrix which is transformed gradually by a calcification process, which is accompanied by the deposition of calcium, magnesium and phosphorus in this matrix. In the course of this calcification process, they suppose that a certain quota of the sulphur of the matrix is replaced by the other elements mentioned, a process which must entail the retention of calcium, magnesium and phosphorus, and an accompanying increased elimination of sulphur. They believe that the metabolic picture of osteitis deformans is, to a certain extent, new in osteomalacia.

The gross pathology is made up of the deformities of the long bones, most commonly outward and forward bending of the tibia. The femur follows in frequency. The cortex is thickened most on the convex surface and the outline is wavy there. The joints are scarcely ever involved, although in advanced cases there may be limitation of the joints as in coxa vara, etc., due to thickening deformity

of adjacent bones. There are more fractures in individuals suffering from the disease than normally. The bones of the lower extremity are usually most manifest probably because of weight bearing. The involvement is usually symmetrical, although cases are on record in which the disease was limited to one-half of the skeleton. Lewin believes that the condition is a combination of two definite pathologic conditions, namely, osteoporosis followed by osteosclerosis, that the condition begins as an osteomalacia with softening due to the abnormal interrelationship between various chemical substances in the bone. During this stage deformities occur. Then, for some unknown reason, the condition of osteomalacia disappears and is replaced by osteosclerosis, during which stage the cortex of the bone assumes a certain hardness which is characteristic of advanced osteitis deformans.

Signs and symptoms include a slow onset extending over a period of months or years. There is usually a vague rheumatic history. Finally, there is gradually weakness of lower extremities, tenderness along the shafts of long bones and a long story of gradual decrease in height. A cervico-dorsal kyphosis appears and the abdomen becomes scaphoid. The patient becomes "simian" in appearance.

The X-ray findings show a rarefying osteitis with a thick cortex due to subperiosteal and medullary new bone formation. The bone has the appearance of cotton wool in both diaphysis and epiphyses. There may be seen bony striations extending out into the soft tissues and areas of rarefaction.

Preventive treatment is impossible because of the difficulty of diagnosis before deformity has set in. Curative treatment at present is impossible. Corrective treatment may be inadvisable because of the age of the patient and the probability of failure.

Goldthwaite, Painter, and Osgood reported a case which suffered a fracture of the afflicted thigh from a severe trauma. The broken bone healed with apparently normal rapidity and firmness. This encourages them to recommend osteotomies for the correction of markedly but slowly developing deformities, especially of the lower limbs.

Abbe found excellent operative repair of bones affected with osteitis deformans. He cites two jaw cases operated upon with perfect results.

Rickets.

It is our impression that in the general discussion rickets will not be sub-divided as it will be necessary for us to do. Also we are sure that the excellent papers of others will leave nothing to add to the etiological and metabolic factors. We are then able to pass directly to the pathology, deformities and treatment.

From the orthopaedic point of view, there certainly are three groups to be considered; fetal rickets, infantile rickets and adolescent rickets. It is with the second group that we are most familiar, and of which we think when we speak of just rickets. However, Jansen, in a recent very philosophical paper on coxa plana introduced the idea that changes here were biological, and in his monograph on achondroplasia, the fact is very evident that he believes that metabolism is interfered with by amnio-pressure. In other words, the elements which go to prevent rickets are present, but their use is prevented in certain bones by the increased pressure on the amnion. As to the adolescent rickets, Freiberg positively says that there is such a disease, and Lewin has recently reported two cases with an excellent discussion of the condition.

Fetal Rickets.—Achondroplasia. Although Ptah was worshiped by the Egyptians, and there dwarf-like people were always considered very desirable gifts for returning conquering heroes to present to their kings as court-jesters, Osler first described a case fully in 1888 and at that time called it fetal rickets. Since that time the cause was not at all understood, various factors being given as etiological, until 1917 when Jansen published his work advancing the theory that pressure in the amnion between the third and eighth week of fetal life produces the changes.

The deformities consist of two types: those produced by infolding and those produced by dwarf growth. The deformities produced by infolding are the sunken nose-bridge, the kyphos baseos "cranii" and the kyphos in the spine from wedge-shaped vertebrae. The deformities of dwarf growth are those in which certain bones are below normal in length when compared to the length of the body. It is the segment that is proximal to the body that is affected, that is, the humerus and femur. In addition to these abnormalities, there are,

of course, the trident-shaped hands, bow-legs and knock-knees, pantaloon-shaped pads of fat on the thighs, and the brachycephalic heads.

The pathology, besides the gross bending of the long bones, consists of an aplasia of chondrium. There seems to be no diminution of bone production, but a definite decrease in the amount of cartilage. As a result, the ends of long bones have rather a cup-shaped appearance. The periostium around the epiphysis is contained in the bony collar much as a ball in the hand. The cortex is thickened on the concave side of the bowing.

Treatment consists of correcting the bow-legs and knock-knees by the same methods to be described in infantile rickets. The kyphos in the spine can be reduced by recumbency on a Bradford frame or better in a hyperextended posterior plaster shell. However, there will always be a tendency in the child to be round-backed. Of course. there is, as yet, no cure for the disease, as the changes take place early in fetal life, and the orthopaedist is most interested in the prognosis. Cases of this type are brought suffering with stunted growth, and it is important that parents be warned that the children must not be expected to gain normal height.

Infantile Rickets. We shall pass immediately to the consideration of the pathology, deformities and treatment of this disease. In the osseous system there is a local or general disturbance of the normal process of ossification, as a result of which the epiphyses become enlarged and the affected bones become soft and plastic; growth is delayed and deformities of a serious nature may arise. Rhachitic bone, on section, shows a thickening of the periostium which has become adherent. The medullary canal is enlarged and the contents have become very vascular. The epiphyseal cartilage is much increased in thickness. Microscopic examination here shows marked irregularity of size and shape of the columns of cartilage cells. The zone of calcification is lacking. As a direct result of these changes the epiphyseal junctions are enlarged and the shafts of the bone are thickened by the formation of osteoid tissue under the periostium. Following this stage of weakness, a stage comes in which the bones become abnormally hard, and it may be the premature solidification at the epiphyseal juncture that causes in part the dwarfing of the stature observed as one of the final results of severe rickets. As a result of all of this, while rickets is not a surgical disease the correction of deformities following it demand surgical treatment.

The general deformities produced by infantile rickets are due to the effects of atmospheric pressure, the force of gravity, habitual postures, muscular action and injury. However, very early in the disease, the epiphyseal junctions become enlarged, and the enlargement at the juncture of the ribs and the costal cartilages produces the well known rhachitic rosary. Also thickening of the skull produces the peculiar rectangular shape, caput quadratum; while the softening results in cranio tabes. The pigeon breast, pot-belly and Harrison's groove are due to atmospheric pressure and habitual posture; while the force of gravity, habitual posture and muscular action are responsible for the rhachitic kyphosis and scoliosis, cubitus varus and valgus, coxa vara and valgus, genuvarum and valgum, the misshapen pelvis, and the rotation deformities of the lower extremities. All of the deformities correct themselves entirely or to a great extent except the rhachitic scoliosis, genu varus and valgus, the misshapen pelvis and the rotation of the lower extremities. Stunting of growth is a constant effect of severe and prolonged rickets.

As yet we cannot, to a great extent, control the shape of the pelvis; and scoliosis following severe rickets is almost as harassing, for almost invariably it increases with growth. The problem then stares us in the face of keeping these children under treatment or supervision for the many years required to obtain their growth.

If little deformity has occurred, we may prevent it by a proper fitting corset or light brace, after the acuteness of the disease is past, keeping the patient recumbent on a Bradford frame during this stage if necessary. If marked deformity is present, then we have a serious problem before us. The child's spine may be straightened with corrective plaster jackets applied in the manner best adapted to the individual case. After that, the position may be retained with removable plaster jackets, leather jackets or back braces until growth ceases. It may be that the curvature cannot be corrected at all, and the best

that can be hoped for is that it be prevented from getting worse—or much worse. Of course, a constant routine of graduated exercise must be observed. At any rate, unless gotten early and treated conscientiously and continuously, these cases of scolosis are depressing.

This leaves the treatment of genu varum and valgum—knock-knees and bow-legs—to be dealt with. There are three divisions of this:

1. Expectant. 2. Mechanical. 3. Operative.

Quoting Lovett: "The expectant method of treatment relies upon nature's efforts to repair the deformity; efforts which are aided on the part of the surgeon by keeping the child off of his feet to a greater or less extent, and by constitutional treatment and by massage and corrective manipulation."

The mechanical treatment aims at the gradual correction of the deformity. The brace usually consists of a steel upright, running from the sole to the groin on the inside of the leg for bow-leg, and from the sole to the trochanter on the outside of the leg for knock-knee. There is a joint at the ankle, but no joint is put at the knee, as this reduces the efficiency of the brace. Correction is obtained by a pad at the knee, pulling laterally in knock-knee, and on the outside pulling inward in bow-leg. It seems to be the concensus of opinion among orthopaedic surgeons, however, that mild deformities may be corrected by corrective manipulation; and that deformities too severe for this should undergo operation. Treatment by braces is a long drawn out, offensive affair with too much depending upon the constancy with which they are worn. The operative treatment consists of the simple procedures of osteoclasis and osteotomy. Osteoclasis is possible in selected cases where the deformity is near the middle of the bone, and may be accomplished by the osteoclast or the bone may simply be broken with the hands. The operation of osteotomy, or cutting the bone in two, is too well known to require further description. A few suggestions may be desirable; that an osteotome with long bevels on both sides be used, that blows of the mallet be light, and that the osteotome be moved back and forth after each few blows to prevent binding. The bone should not be cut completely across, rather an attempt to obtain a green-stick fracture be made.

Little or nothing has been done by most orthopaedic surgeons to correct the rotation deformities. Internal rotation of the tibia is bound to produce flat foot in its worst form. A few progressive men, then, are dividing the tibia and fibula and rotating the distal fragments outward. This is especially being done in which an operation is already necessary on the feet. The results so far have been most gratifying.

Adolescent Rickets. It is practically accepted now that rickets may originate at puberty, although the contention that such is a recrudescence is not without reason. A review of the literature seems to indicate that the etiology of adolescent rickets is purely a matter of bone metabolism—the pathology concerns itself practically entirely with the gross changes occurring in the parts affected; and the symptoms are deformity mainly, with some pain and weakness. Patients notice a decrease in their height, and girls especially complain of an increasing inability to wear short skirts. The diagnosis is easy with good X-rays. Osteomalacia and osteitis fibrosa occur at a later age and are more generalized. Treatment is operative in that only rarely a case reports before marked deformity has occurred.

Conclusion.

In conclusion, we would like to raise the question of preventive orthopaedics in the deficiency diseases. We all seem to think that we have performed our duties if the general condition is cured and very gross deformities are corrected. However, never could we so mislead ourselves. Lowman says that knock-knees, bow-legs, torsion deformities, flat-feet, pronated ankles, short legs and faulty spinal alignment produce joint conditions, due to improper weight-bearing with or without arthritis, periarthritis, periostitis, neuritis, etc., that make up a large part of our daily work. The examination of men for military service certainly showed this. The orthopaedic examination of several hundred Boy Scouts, and the daily examination of school children by the writers, show that at least one child out of every four needs supervision and treatment for a deformity following a deficiency disease —mainly rickets. They would like then to

make a plea for the routine orthopaedic examination of all school children. In this way these deformities may be sought out, and corrected and, what is more important, by proper supervision of physicial exercise, games, posture, etc., such deformities may be prevented. The correction of cripples is spectacular and appeals to a few, but let us not discard a remedy that every other department of medicine is using to such good advantage—prevention.

15 *East Franklin Street.*

NEUROLOGICAL ASPECTS OF NUTRITIONAL DISEASES.*

By FRANK H. REDWOOD, M. D., Norfolk, Va.

The information gathered from the English literature on the nervous manifestations of the deficiency diseases is rather limited, with the exception of Pellagra, on which a great deal has been written by American authors.

There are two conditions which we agree are caused by certain food deficiencies, in which there are no nervous symptoms, and therefore will simply be mentioned. I refer to Xerophthalmia and Keratomalacia.

Pellagra is probably of more interest to the neurologist than any other deficiency disease. It was first recognized in Italy early in the seventeenth century, and in France the first of the eighteenth century. Probably the first paper on Pellagra appearing in English was one by an Englishman published in 1817 and reproduced in this country the following year. The disease had not been recognized in this country in any great numbers until 1907, although a few sporadic cases had been reported from different states about 40 years before this time. Until 1911 most of the cases had been reported from institutions, chiefly insane asylums. Tucker[1], however, in the early part of 1911 reported 55 cases occurring outside of institutions, and added 11 to them the same year. All are familiar with the tremendous amount of work done by Goldberger of the Public Health Service, and others. These authors have practically shown that Pellagra is a food deficiency disease, though there are others who claim that foci of infection enter into the etiology. In my own quite limited experience with this disease I do not think I have ever seen a case that did not have a mouth infection in a greater or lesser degree.

Text books of pathology do not deal with Pellagra to any great extent. I am unable to find anything on peripheral nerve pathology. It is believed by some that Pellagra does not produce a definite systemic disease of the central nervous system. Spiller[2] thinks the cell degeneration is caused by some toxic or infectious substance affecting all parts of the cerebrospinal axis, producing cellular degeneration as well as degeneration of nerve fibers in the posterior and anterolateral columns. Tucker, quoting Lavinder, says the pathology is neither consistent nor characteristic. Degenerative changes have been noted in the chromophilic cells of the cortex of the cerebrum and in the cells of the cerebellum, which may be the cause of the ataxia found in some cases. The skin manifestations are thought by some to be trophic in character. The neuro-pathological picture may be said to consist of degenerations, irritations and hyperaemias localized particularly in the spinal cord and its coverings, and in the brain.

If the skin lesions of Pellagra are trophic they do not correspond to the peripheral nerve distribution. They do, however, correspond to cutaneous areas of distribution of some of the posterior nerve-roots. The deep reflexes may be unequal, absent, sluggish, or equally exaggerated. Hemiplegias and monoplegias do occur but are infrequent. Pathological reflexes are not found. Romberg occurs in about one-half the cases and ataxia is frequently present, especially in the severe types of the disease. The senses of smell, hearing and taste are frequently affected, and in a certain number of cases touch sensation is altered. In some patients there is cutaneous anesthesia over the affected part. Restlessness, insomnia and vertigo have been almost constant symptoms in cases that I have seen. There are many mild types that show only restlessness, vertigo, insomnia, etc., without the more definite organic nervous changes.

The mental symptoms of Pellagra do not correspond to any known mental disease. Some cases resemble acute mania without the rapid flow of ideas, and without the homicidal tendencies seen in a maniac. Others resemble the depressed phase of manic depressive insanity without the agitation and the idea of

*Read as part of the symposium on "Nutritional (Deficiency) Diseases" at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

having committed the unpardonable sin. In the severer types of cases there is frequently marked mental deterioration. A large percentage of cases are emotionally upset, either irritable, with frequent outbursts of temper, or have frequent crying attacks. Many patients are depressed, and in this state they are suicidal. The delusions are changeable and are usually of persecution. The hallucinations are those of hearing and sight. Apprehension, and a sense of impending danger, are fairly constant mental symptoms. In asylums the study of the mental phases of Pellagra has often been unsatisfactory, due to the disease attacking a patient already insane.

Davenport[3], in studying Pellagra from an hereditary standpoint, concludes that there is no evidence of direct heredity. There may be, he says, an hereditary disposition to the disease, in those families in which chronic gastro-intestinal symptoms have existed for several generations.

A disease closely akin to Pellagra and probably due to an unbalanced diet is Acrodynia. I have never heard of a case occurring in this section of the country. Byfield[4] studied the effect of food on seventeen cases and concludes that the benefit of adequate food was unmistakable, although cure was not brought about quickly in the well-advanced cases. From his studies he says that Acrodynia is a primary nervous disease with a preponderance of sensory manifestations and a mild affection of motor nerves. Brown, Courtney and Maclachlan[5] in their study of eight cases conclude that food deficiency is not an adequate explanation of the disease, and that it is a chronic toxic infection following, or coincident with, some respiratory infection bringing about the metabolic and clinical changes.

The disease is characterized chiefly by paresthesia of the feet and hands, which is a most distressing symptom. A diminution of pain sense has been noticed but this is not a constant sign. Falling out of the hair and changes in the nails are fairly constant findings. The deep reflexes are usually sluggish or absent, but occasionally may be increased. Photophobia is almost a constant symptom and causes the patients to bury their heads in the pillow or to protect their eyes in some other way. Most of the patients are dull and apathetic, although in one of Byfield's cases delirium was noted. Falling out of the teeth with either slight or no involvement of the gums seems to be a frequent symptom. There is no adherent exudate on the lost teeth. This condition suggests an involvement of the fifth nerve. In some cases there seems to be a vasomotor disturbance, as manifested by blueness of the fingers and toes. With the exception of an occasional trace of globulin the spinal fluid has been normal in all cases reported.

Beriberi at one time was thought to be a tropical disease but in recent times it has been found in Labrador and Newfoundland. It is now generally conceded that beriberi is due to lack of a specific substance in food designated as anti-beriberi vitamin, or water-soluble B. This disease may occur in any part of the world if man restricts his diet to certain articles of food. McCollum[7] describes an outbreak in 1914 at the jail in Elizabeth, N. J. Beriberi is a type of peripheral neuritis affecting both motor and sensory nerves. H. Wright[6] found changes in the cells of the posterior root ganglia and in the anterior horns of the cord in eight consecutive cases occurring in his practice. The antero-external leg muscles seem to be particularly affected, producing a characteristic gait. The phrenic and pneumogastric nerves are affected early, and this is usually the cause of early death. The sensory changes are anesthesias and severe pains in the limbs. The deep reflexes are lost early. All degrees of severity are seen, from simple weakening of the extremities to an acute pernicious form that terminates fatally in a few days. According to Mccollum[7] there are two distinct forms, the wet and the dry. Anesthesia, wasting and paralysis are the chief symptoms of the dry type, while the important manifestation of the wet type is edema, which affects the trunk, limbs and extremities. In both forms there is tenderness of the calf muscles and a tingling or burning sensation in the feet, legs and arms. Mental disturbances not unlike those seen in alcoholic polyneuritis are occasionally observed.

Beriberi in this section of the country does not present an economic problem, as cases are rarely found.

The remainder of the diseases commonly considered to be due to certain food deficiencies are of particular interest to the pediatrician. These are, rickets with the usual association

of tetany and spasmophilia, and scurvy.

Scurvy is a deficiency disease due to the prolonged use of a diet lacking in the essential vitamin designated as vitamin C. This vitamin is found in large amounts in the citrus fruits. The chief nervous symptoms of scurvy are restlessness, pain and insomnia. In some cases a diagnosis of paralysis is made on account of extreme pain on motion and epiphyseal separation. Scurvy and rickets occur simultaneously in nearly one-half the cases, and at autopsy rickets is almost invariably found associated with scurvy. Holt[8] says, however, there is no reason to believe that scurvy and rickets are different forms of the same disease.

The most constant early nervous symptoms of rickets are sweating of the head and restlessness at night, the children tossing about in bed and never having the quiet sleep of healthy children. If these patients are not properly treated in the early stage, they will, in a very large percentage of cases, develop tetany and spasmophilia, one of the most characteristic symptoms of which is cardo-pedal spasm. This is not the most common symptom, however, as it is seen in a relatively small per cent. of cases. A typical case of tetany presents flexed fingers at the metacarpo-phalangeal joints and external phalanges; the thumbs are adducted; the wrist is flexed and the hand drawn somewhat to the ulnar side. In some cases of marked severity the wrist is motionless. The feet are extended; the first row of phalanges of the toes are flexed; the second and third rows are extended; the arch is increased. Pain is present and sometimes acute. The cardo-pedal spasm may last a few hours or days but the muscular contraction is usually continuous. In many cases the muscular contraction involves the muscles of the larynx, producing a crowing sound on inspiration, and when this is severe it may lead to loss of consciousness or convulsions. Occasionally, attacks of severe laryngismus stridulous prove fatal.

There are four signs that should be sought for when tetany is suspected, viz: Chvostek's, Trousseau's and Erb's signs and the peroneal reflex. Erb's sign is presumptive evidence of tetany but is not conclusive.

It must be borne in mind that several of the diseases due to food deficiency may occur at the same time. This is particularly true of those diseases that are more common in infancy and childhood.

310 *Taylor Building.*

Bibliography

1. Tucker, Beverley R. A Discussion of Pellagra, with Remarks on Sixty-six Cases Occurring Outside of Institutions. Old Dominion Jour. of Med. and Surg. Vol. XII, No. 4, April 1911.
2. Spiller, W. G. Amer. Jour. Med. Sciences, 1911.
3. Davenport, C. B. The Hereditary Factor in Pellagra. Arch. Int. Med. Vol. XVIII, No. 1, July, 1916.
4. Byfield, Albert H. A Polyneuritic Syndrome Resembling Pellagra-Acrodynia? Seen in Very Young Children. Am. Jour. Dis. Children. Vol. XX, No. 5. November, 1920.
5. Brown, Alan, Courtney, A. M., and MacLachlan, I. F. A Clinical and Metabolic Study of Acrodynia. Arch. Ped., October, 1921.
6. Wright, H. Brit. Med. Jour., June 29, 1901.
7. McCollum, E. V. Newer Knowledge of Nutrition. The Macmillan Co.—1922.
8. Holt, L. Emmett, and Howland, J. Eighth Edition, Revised. D. Appleton and Co.

CUTANEOUS ASPECTS OF NUTRITIONAL DISEASES.*

By THOMAS W. MURRELL, M. D., Richmond, Va.

This phase of the subject will be dealt with briefly. There are three undisputed nutritional diseases, Beriberi, Xerophtholmia and Scurvy, with two that are debatable, Pellagra and Rickets. There are no distinctive cutaneous manifestations in Beriberi or Xerophtholmia and the same may be said of Rickets.

Brunet (*British Journal of Children's Diseases*) does think there is more sweating than normal with Rickets and a circulatory disturbance appearing in sensitive skin, which shows a red line, when a point, like a fingernail is drawn across it. This, however, is a part of many conditions due to intestinal intoxication.

In Scurvy, there are the distinct symptoms of the haemorrhagic type. On the skin they appear as bruises over the joints and sometimes around the eyes, giving rise to the idea of trauma. On the mucous membranes they may occur as blood-filled vesicles or bleeding excoriations, particularly in the buccal cavity and on the gums. The entire skin is dry and harsh and on the lower extremities follicular hyperkeratosis may take place. Wiltshire (*Lancet* 1919) reported this symptom as occurring in 55% of the three thousand cases of Scurvy occurring in the Servian army.

*Read as part of the symposium on "Nutritional (Deficiency) Diseases" at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

Pellagra has a distinct syndrome affecting the skin. It occurs as a dermatitis, affecting the dorsal surface of the hands and extending up on the arms, the exposed surfaces of the face, and the back of the neck, the familiar pellagrin collar. The intensity varies from a pigmentation such as would occur from a slight sun-burn all the way to an intense condition, with the formation of bullae, which rupture leaving weeping surfaces. Any and all stages of this eruption have the appearance of that due to heat, which in the days before its recognition in this country, gave rise to the belief, in institutional cases, it was due to burns by careless nursing. Its most common site is the back of the hands and here it takes on the gauntlet appearance, the pigmentation being marked at the upper border where the limitation from the normal skin is clear cut. From its only occurring on the sites exposed to light, it is generally accepted that actinic light determines the sites of the eruption by its effect on a sensitized skin.

If vitamine deficiency is the cause of Pellagra, it is strange that light should cause this here and yet be one of the greatest aids in the treatment of Rickets. The vitamines are practically the same in the foods supposedly lacking in both conditions. Personal observation would lead to the assumption, there is no relationship between the severity of skin symptoms and the other phases of Pellagra. As in syphilis, the most acute skin conditions may be present in a practically non-toxic case.

The greatest example of nutritional lack in modern times is the German nation in the World War. There is no account of any epidemics of Pellagra though Galeusky (*Urologic and Cutaneous Review*) quotes Riel as describing an epidemic in 1917 of a black discoloration of the skin. This occurred over the face, in the axillary and mammal folds and was not inflammatory. It was made much worse by X-ray and seemed to be increased by sunlight. This disappeared when food conditions became easier and was believed to be due to the absence of wheat in the diet. The most striking thing in this article was the report of epidemics of pyogenic and parasitic conditions which occurred as a part of the general nutritional lack.

This brings out the thought which was emphasized by a food chemist of a packing concern, in a personal conversation a short while ago. He states that hogs which are fattened on swill, put on large amounts of fat, but at the same time waste in muscle. When at their fattest, they develop ulcers of apparently pyogenic nature, but which resist all antisepsis. These ulcers heal readily when the food of the animal is changed.

It would seem, therefore, if there are a few conditions recognized as due to nutritional deficiency, there must be a host of conditions which arise because of a half-way deficiency. It further suggests the reason for protein starvation being the fundamental cause of Pellagra, even if an infective organism is the exciting cause of this disease.

It certainly demands a closer inspection of the dietary in conditions heretofore considered entirely local and only needing local medication.

17 *East Grace Street.*

Discussion.

Dr. W. A. Plecker, Richmond:- The work that has been done in recent years by Dr. Goldberger, Dr. McCollum and some other research workers in nutrition is, in my mind, of great importance to all health workers and physicians. We have had in Virginia a reduction in deaths from pellagra from 332 in 1915 to 115 for last year; only about one-third as many. If that is due to any other cause than the dissemination of information which Dr. Goldberger has given out, I do not know what it is.

Another interesting point that Dr. Goldberger brings out is the recent discovery by Dr. McCollum of his fourth vitamin. I had not heard of this and doubt whether it will influence very greatly the actual feeding or not, but it is of interest.

Dr. Goldberger emphasizes the important point that Dr. McCollum has brought out of the use of green vegetables and milk in order to supply the calcium which is needed in bone and tooth formation. I believe that we are coming to the time when the study of bacteria as a cause of disease has almost reached its limit, and we are entering now into a new era of medicine when questions of nutrition come first and must be considered one of the great preventive measures. I believe that a great work can be accomplished in the matter of prenatal feeding. That point is clearly brought out by Dr. McCollum who, by feeding small animals, rats, determined just what would be the physical condition of the descendants of those rats when the diet showed certain deficiencies, and determined with almost absolute accuracy how long the descendants of those rats would live. I could not see that there was a great deal of positive prenatal work in evidence by those doing it, until Dr. McCollum brought out this great question of the prenatal feeding which he narrows down to the influence of feeding the prospective mothers plenty of milk along with leafy vegetables, so as to supply the bone and tooth material that are needed in the composition of the skeleton of the child. If we can just get these points over to the prospective mothers of Virginia and to the country at large, I believe that there is an opportunity of not only improving the individuals who are to be born in the future, but of actually improving the condition of the whole race. I think this question

of nutrition which has been so ably presented to us here is one of supreme importance, and I hope that the men who have heard it will carry out the measures suggested.

I want to suggest one thing, that Dr. Royster included in his paper,—those little remarks which he made on the side with reference to the importance of avoiding condensed milk and dry milk. I think that is one of the most important points that he brought out. Another point, in connection with the use of orange juice, I would like to call attention to the fact that tomato juice is equally as good and can be secured everywhere.

Dr. Chas M. Hazen, Richmond: This broad subject deserves the able treatment which it has received in this symposium. It defies exact definition and limitation, but practically our attention is fixed on the result of the disturbances of nutrition upon cell function and regeneration, causing lowered muscular, circulatory and nerve tone, with diminished resistance to disease.

McCarrison's classical article (*Indian Journal of Medical Research*, abstracted in *Journal of American Med Ass'n*, Vol. 74, No. 12, Mch. 20, 1920) uses the expression "nuclear starvation" of cells of all kinds; he is referring particularly to the lack of vitamin water-soluble B, incorrectly limited by the term "anti-neuritic," since all tissues suffer degenerative changes, the symptom-complex being due to chronic inanition, alimentary derangement, disordered endocrines, as well as malnutrition of the nervous system.

McCarrison lists the various organs, the adrenals being hypertrophied, others atrophied in various degrees of severity after the following order: Thymus, testicles, spleen, ovaries, pancreas, heart, liver, kidneys, stomach, thyroid, brain; the red cells are diminished. (Pituitary in experimental male pigeons shows tendency to enlarge.)

Naturally this is but one phase of a great subject, as extensive as the range of physiological chemistry. From the discussion of one vitamin, water-soluble B, we turn to A and C, the anti-rachitic and anti-scorbutic respectively, and the recently discovered vitamin D; then to food factors in general, mineral salts, proteids and their constituent amino-acids, fats, carbohydrates, and a consideration of their metabolism and products.

This leads to a discussion of endocrinology, on the broad basis of the hormonic inter-relation of all the tissues.

We are brought towards the explanation of certain mysteries such as diabetes, psoriasis and leukoplakia; we contemplate the phenomena of anaphylaxis—for example, "alimentary anaphylaxis," from pancreatic insufficiency, in which egg-albumin although digested by pepsin produces in sensitized animals diarrhoea and rash.

We notice the poorly understood metabolic influence of diseased tonsils and adenoids, of heteroplastic grafts, of malignant growths—these are not to be explained by such simple postulates as those of Koch. We turn to physiological conditions and effects on function and development, pre-natal and post-natal, from exposure to heat and cold, to electricity, to cold light, to the ultra-violet ray, to exercise. Animal experimentation is being diligently pursued along all these lines. We may instance the effect of the mercury lamp in producing monster forms in molluscs (Poynter, abstracted *Anatomical Record*, Jan. 20, 1922), the effect of various agencies on the oestrus cycle of the albino and Norway rat.

Here we begin to see the light down the vista of heredity and meet such abnormalities as mongolism, (transmitted by male) achondroplasia. We even find the laboratories influencing by artificial means the transmission of chosen dominant or recessive qualities, Danforth reports (abstract *Anat. Record*, May 20, 1919) brachydactyly, polydactyly, color and shape of comb as being handed down in different proportions by cocks before and after treatment by alcohol.

Our subject thus partakes of the widest character throughout the field of physiology and pathology and is interested in all descriptions of natural and artificial influences, such as drugs, the leucocytic reaction to morphine, the specificity of arsenic and antimony, the effect on life and death of food, exercise, heat, light electricity, violet rays, X-rays and radium.

This leads me to refer to the relation to deficiency disease of the last two agents, X-ray and radium; a productive relation, as in animal experiments they are used to influence growth and development; a therapeutic relation, to control hypertrophy and excessive function in thymus and thyroid. They are known to produce deleterious effects upon the operator, indicated by leucopenia, eosinophilia, general asthenia.

I would indeed protest against the indiscriminate use of these powerful agents and feel that professional enthusiasm frequently goes too far, with uncertain and dangerous results to the patient.

Dr. W. H. Ribble, Wytheville: I recently saw a child, eight months old, with a very severe case of eczema of the scalp and face. It was brought out that the child's exclusive diet had been condensed milk. On withdrawal of this and adjustment of the food, there was immediate improvement.

I find, so often, that children with digestive trouble are given condensed milk because it appears to agree with them better than other artificial foods. And, because the child appears to keep well and thrive, the mother is "afraid to make a change." She does not, or will not, believe that this apparent correction is on the same principle that starvation corrects indigestion and must not be continued too long.

Thirty-five years of experience makes me hesitate to condemn prepared foods "in toto." There are babies who will thrive on milk mixed with barley, Mellin's food or other prepared foods, who will not do well on milk alone. The admixture prevents the formation of large curds, which makes cow's milk hard to digest.

Again, there are conditions in which milk and broths are not tolerated at all and the child will do well on barley water or some prepared food, until that condition is overcome.

Dr. R. Bruce James, Danville: In regard to Pellagra: from what I have seen of it and heard others say, and from what has been written on the subject, I am almost persuaded there are two different diseases called Pellagra. One is caused by improper food and can be cured by proper diet. The other disease has no relation to food, but is curable by drugs, chiefly the arsenic preparations—without change of diet. This is the only kind of Pellagra I have seen.

Now in regard to malted milk and condensed milk; although they are not complete foods, and often produce scurvy, I have seen children who have grown up and had nothing but malted milk who seem perfectly normal in every way, and yet these children show abnormality as to general nervous system later in life. Physically, they are all right as children, but in after life nervous symptoms develop.

There is not enough attention paid to feeding our school children; we have gone off at a tangent in the matter of athletics in our schools; we take a poorly developed and poorly nourished child and attempt to make an athlete of him, without looking after his food supply at home. People in this country for the most part have sufficient food for their children, but are

woefully ignorant as to its preparation for consumption by the growing child.

Feed a child properly from infancy and you will not need a teacher to make him run, play and develop him physically. Bring him up on poor food and he will have a poor physique with all our craze for athletics.

Food values and the preparation of food should be taught every child and dietetics should be compulsory and taught in the Grammar School,—boys as well as girls should be taught these things. We wait until they enter High School, where only a small percentage of the children go, then we allow the child to decide for himself whether he will take Dietetics or not. This is all wrong and will be corrected as we grow wiser.

Dr. C. F. Rinker, Upperville: I would like to ask the gentleman who just sat down whether he is certain that those children were fed on malted milk alone. In my experience they say they were fed on malted milk, but when you inquire closely you find there was something added to the malted milk, and the amount of milk that was added was all the nourishment the child required. These are placebos, in my opinion, and are not of any nutritious value. It has been a mystery to me why medical men try to improve upon the work of the Creator. He put milk in the mother's breast. If he had wanted malted milk or Mellin's food, he would certainly have placed it there.

I live in a rather rural district and have a good many children among the poorer classes of people. I am frequently called to homes where they have given the child all sorts of rich gravies, etc. The trouble is to get correct food, and I find it is very easy to give them a preparation of malted milk or Mellin's food and tell them to go according to directions. But I do not do that. I go into the home and prepare that milk myself and I show the people how it must be done. I see that the milk is boiled as I would have it boiled, and I use boiled milk exclusively. I have every reason to believe that boiling does not interfere with the nutritious value in any shape or form.

I wish I had with me a picture of a little child I took hold of some years ago, when she was about one week old. She only weighed about one and one-half pounds. I fed that child on one-twentieth milk, one part milk to twenty of water. The mother asked me why I did not give it water altogether. I explained that we would simply have to find out how much the child could take and digest in order to be on safe ground and be able to save the child. Of course you will understand that I gradually increased the milk from time to time until I found how much the child could digest. It is easy to go too far, which can be detected by watching the stools every day. As soon as curds appear, you will know that you have gone too far and must at once cut down the amount. We got along very well with it up to a certain period, when the mother became anxious and increased the amount of milk too rapidly and the baby lost everything gained, but I had her go back and start over again and come up gradually, which she did. The child began to increase in weight and is today equal to any child of the age I know.

I want to tell you of a case of impetigo. This mother has given birth to six children. The first four were not under my care and were fed on Mellin's food and malted milk and the different preparations. All of these children died at about four months of age. With the fifth child I had the mother during her gestation and I tried my best to get her to take milk, and finally succeeded. She had been told that her milk was poison to her children, and after her confinement she said she could not nurse the child. But finally, I convinced her and that child is a good looking specimen today. The other child, at the age of two months, developed impetigo, and I feel sure that the mother's diet during gestation had something to do with it.

Since the above remarks were made, the child with impetigo has died, having been treated by three general practitioners and two specialists. In my humble judgment, it is a dangerous thing to give much medicines to little babies, for fear of upsetting their digestion and lowering their resistance.

Dr. Joseph Goldberger, Washington, D. C.: There are one or two things that I should like to say besides attempting to answer one or two of the questions that have been asked.

I should like to emphasize as perhaps more important than the frank, outspoken entities that are recognized as scurvy, beriberi, etc., the latent or larval forms of these conditions. Very little thought will lead one to realize that there must be an almost infinite series of stages between optimal nutrition and nutrition so faulty as to manifest itself as some frank form of pathological condition. It must be manifest, too, that the symptoms, if any, of these minor deviations may be expected to be so mild or slight, so lacking in distinctive characters, as to make it impossible to identify their origin. In other words, it is readily conceivable that we may have all degrees of ill health dependent on varying degrees and combinations of faults in diet, some of which, perhaps a very large proportion of all, may be difficult or impossible to identify clinically. It is, therefore, a good, sound, practical principle for the clinician at all times, but particularly when dealing with vague, ill-defined types of ill health, to consider the possibility that these may be dependent on faulty diet and to advise his patient accordingly. All this leads us again to emphasize the basic importance of a proper diet and normal nutrition.

Now as to some of the questions that have been asked: I agree with the statement of one of the speakers that there is no necessary correlation between the extent of the eruption and the severity of an attack of pellagra. It is much less certain, however, than the same speaker seems to believe that there is any real correlation between the pellagrous eruption and sunlight. With respect to the question of the cause of the reduction of pellagra mortality in Virginia, my judgment is that the economic factor is principally to be credited with it. Improvement in food supply has resulted in less sickness from pellagra and so in fewer deaths. In a smaller measure it is due to the more intelligent and more effective treatment given to the sick.

Dr. L. T. Royster, Norfolk: About three-fourths of my professional work is among malnourished children and I naturally feel quite keenly on that side of the question. My belief is this. Whatever may be the underlying factors of malnutrition, infections of the tonsils, infections of the teeth, or anything you choose to mention, we must know in order to handle these cases intelligently, two or three fundamentals. We must know, as far as science has taught us up to the present moment, what takes place chemically in the digestive tract from the time the food is ingested to the time the dejecta is expelled. We must know the mixture of food elements in every preparation. We must know as far as science has taught us up to date, the relation of metabolism to these food elements. You can not treat malnutrition on any other basis than intelligently. In fact, everybody who has the interest of mankind at heart, and I am quite sure physicians have, should train themselves in these fundamentals and apply the principles learned in the handling of nutrition cases, remembering always that you can not measure the amount of vitamin. It is a very hazy sort of thing at

present. We know that it is contained in a certain food product; you cannot measure this, that or the other in every single potato, or apple, or kernel of corn, or anything like that, but you should know the approximate proportion of each of the essential elements in the available food. Therefore, give that matter thought from the time the mother knows she is pregnant until the time the child passes into the adult, remembering, if you please, that pediatrics has to deal with two important factors, one which has been too long emphasized, the care of the individual in acute conditions, which is important as far as life and death is concerned. But also remember that the baby of six months or the child of five years in the course of twenty or thirty years is going to be a governor or legislator, and what is vastly more important, the mother or father of the next generation. Pediatrics has to deal with the adult as seen in the child. That is the viewpoint of the child that I wish to bring to you on this occasion.

Dr. Thos. Wheeldon, Richmond: I am sure that you men are overlooking the orthopedic situation,—the fact that 25% of the school children have weight-bearing defects due to deficiency disease. After you cure the child's rickets, his scurvy or other things, are you going to leave him deformed? If you do, when these children become adults you are going to fill the orthopedic surgeons' offices with cases that could easily have been prevented. Extensive experience in the public schools of Richmond has convinced me that this is being overlooked entirely.

CERTAIN ASPECTS OF MEDICAL EDUCATION.*

By THEODORE HOUGH, University, Va.
Dean, Department of Medicine, University of Virginia.

I have purposely chosen for the title of this paper one which does not narrowly confine me as to subject matter. Medical schools are continually criticized by physicians and by the general public for a number of things they do and it seemed worth while for some one who is actually engaged in the work of class room instruction and in the administration of the internal affairs of a medical school but who nevertheless hopes that he pursues this vocation with single reference to the function of the medical school in the organism of society, to discuss some of these criticisms.

Education and Licensure of the General Practitioner and of the Specialist.

The primary function of the four-year course in medicine is to train safe general practitioners of medicine. It is not the function of this school to train specialists. Specialization should always be built upon the foundation of training for general practice and the time is coming when it will no more be possible for a physician to engage in the practice of a specialty without adequate training therefor than it is for one to engage in the practice of medicine without a license from a State Examining Board. Specialists are needed; but where we need one specialist, we need ten general practitioners. Both to maintain the proper relative proportions of specialists and general practitioners and equally to insure proper training for the practice of a specialty it is of the highest importance that it be made impossible for a physician to *license himself* as a surgeon, a gynecologist, or an oto-laryngologist.

Some legal authority must be established to license specialists. The State Boards of Medical Licensure, reasonably well adapted to license general practitioners, are hardly fitted for this work. I would offer the suggestion that this is a service which the National Board of Medical Examiners may well assume,—this Board conducting the examinations, both theoretical and practical, and the State Boards issuing the license only to holders of the certificates of the National Board.

The foregoing remarks touch upon a frequent criticism of the modern medical school—that it is training specialists and not general practitioners. This is true in a very limited sense and only in a few medical schools. A distinct and in my opinion a permanent reaction has set in against the practice of some medical schools of making the fourth year of the curriculum consist almost entirely of electives, thus encouraging specialization in the four-year course. The remedy for the abuse of specialization lies in proper legislative enactments and not in any change of curriculum or of purpose in the medical school.

The Effect of the Elevation of Standards of Medical Training Upon the Output of Physicians.

Granting then that the medical school is really training and will continue to train general practitioners (a small percentage of whom will spend three or four additional years in preparation for the practice of a specialty), I proceed to the next proposition which I desire to advance—namely that *every man graduated from a medical school should be trained to bring to his patient the very best of diagnosis and treatment possible for a general practitioner in the existing state of the science and art of medicine.* The charge is repeatedly made that medical schools have so advanced their standards of admission and graduation,

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

have so increased the time and expense of training that the number entering upon the study is too greatly reduced; "the poor boy, and especially the country boy, is thereby virtually excluded from medicine as a profession; the city with its allurements absorbs the corporal's guard whom the medical schools graduate, and none are left to care for our rural population." We continually hear the cry "Give us doctors; well trained doctors if possible; but in any case doctors and plenty of them." Let us examine the facts.

The graph in Figure 1 gives you the exact statistics of what has happened. The peak came in 1901 since which time there was a steady decline until the more rapid fall in 1918,—obviously due to the universal requirement of one premedical college year in all schools in 1914. Many schools did not wait until 1914 to put the advanced requirements into effect and part of the gradual decline from 1905 to 1913 inclusive is due to the adoption of the one or even the two-year pre-medical requirement by one school after another during that period.

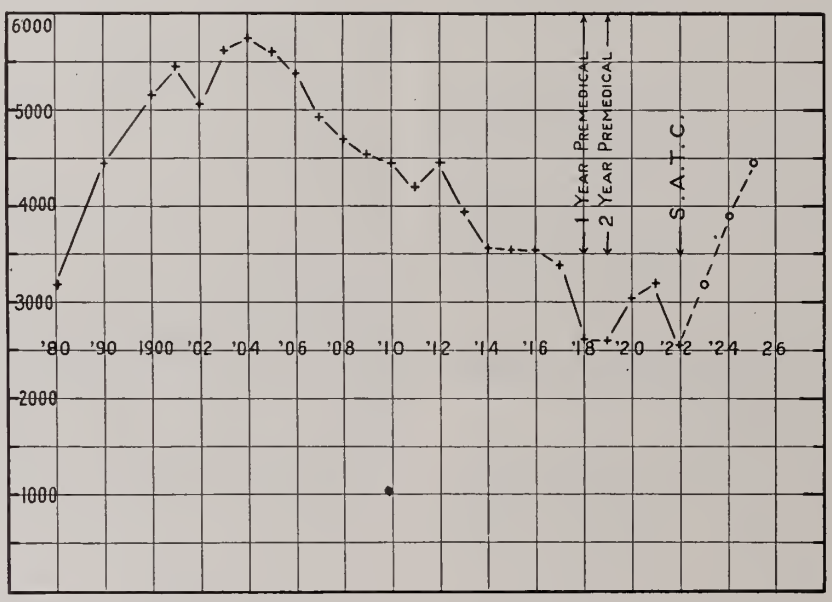


Figure 1. Chart showing number of graduates of American medical colleges from 1880 to 1922, inclusive, and estimated number of graduates in 1923, 1924, and 1925.

The graph was plotted from Table 5, Journal of the American Medical Association, Aug. 19, 1922, p. 682. The number of graduates for 1923-1925 is estimated from the enrollment in first, second, and third year classes for 1921-1922 (Ibid. Table 3, p. 636). Figures given in the latter table show that:

87% of first year students enter second year.

94% of second year students enter third year.

99%+ of third year students enter fourth year and graduate.

83% of first year students complete medical course.

The number of graduates shows the effect of the advance both of admission requirements and of those for graduation and is therefore a more reliable index of the effect of increased educational requirements than the number of men admitted to our medical schools. The modern improvements in medical education began about 1900 or 1901; the one-year pre-medical college requirement went into general effect in 1914; the two-year pre-medical college year in 1915. Beginning with 1904 or 1905 we should therefore look for the effect of the first improvements (high school graduation for admission and better teaching in the medical course) upon the number of graduates.

It is a most instructive fact that the adoption one year later (1915) of an additional premedical college year did not result in a further decrease of the number graduated in 1919. The man who could or would spend one year in college to prepare himself for the study of medicine was willing to spend two years for the same purpose if necessary. In other words, the student body of our medical schools by that time consisted of men and women who took seriously their responsibility for adequate training for their chosen life work.

After 1919 the number of graduates dis-

tinctly increased for two years until the present year, 1922, when there was a sudden drop. This may seem disturbing until one remembers that the Class of 1922 entered in the Student Army Training Corps year, 1918. Both because some men merely took advantage of this avenue to escape the draft, but more because a larger number were so thoroughly discouraged after one term of that period of educational delirium and withdrew at its close, this class,—somewhat smaller to begin with—showed an exceptionally high percentage of mortality.

That this is the correct explanation of the marked decrease in the number of graduates last June is shown by the number we may reasonably expect to graduate in '23, '24, and '25, estimated from the number of students enrolled in the session 1921-22 in the third, second, and first years respectively. (See Figure 1). It is clear that, with the passing of war conditions, there has been a remarkable increase in the number of men entering upon the study of medicine and in 1925 we may expect to graduate about 4500 men and women well prepared to practice medicine as against 5700 graduated in 1904, more than half of whom were emphatically not fitted to practice medicine. In 1925 we shall graduate 80 per cent of the highest number graduated before the advancement of standards.

We cannot, of course, expect to continue the remarkable rate of increase shown in the graph for 1923-1925. It is partly due to delayed entrance upon professional study of men in the service or who in other ways were drawn away from schools and colleges by war activities and conditions. It was favored by the general prosperity which prevailed into 1921 and the ease with which money could be borrowed. We should rather anticipate a slight decrease in first year enrollment either this session or next,—or at any rate no increase. The figures for the total enrollment for the present session, which are not yet available, are awaited with interest as an indication of what we may expect in the future.

If medical schools maintain, as there is every reason to think they will maintain, this output of physicians, that fact will constitute an object lesson which all engaged in higher education should take to heart. The period of training has been lengthened from four to six years, the expense of the course to the student has greatly increased, the two premedical college years have sifted out most of the incompetents and impossibilities who formerly crowded into the medical course; above all, the course of study has immensely increased in difficulty; yet, despite all this, there will have been by 1925 only a decrease of 20 per cent from the peak year before these educational reforms were begun. We are often too timid about doing the right thing in education because we do not trust the public to recognize and support a good thing. Yet here is perhaps the boldest and most heroic measure for the elevation of educational standards in our educational history put into effect with only a trifling diminution of enrollment. I believe in avoiding undue haste in such matters; but I also believe that if the two-year premedical college standard had been enforced for all Class A schools in 1910, it would have been accomplished with no greater loss of students and without any more trouble than that with which it was actually accomplished in 1915.

The Problem of Rural Practice.

It is not altogether inappropriate to discuss briefly in a paper entitled "Certain Aspects of Medical Education," a very real and serious condition for which medical schools are unjustly held responsible; namely, the supply of physicians to rural districts. There can be no doubt that rural Virginia is inadequately supplied with medical service and there can equally be no doubt that an adequate rural medical service is indispensable to the economic life of this state; but neither the medical school nor legislative enactment can force medical graduates to go into rural practice.

The need of an adequate rural medical service is obvious; all desire to meet this need. The extensive discussions of the subject in Virginia during recent years, however, reveal wide differences of opinion both among the laity and among physicians as to how this need can be effectively met.

The measure most extensively urged is to graduate more physicians,—even more physicians, for example, than in the peak days of inefficiency of medical education in 1900-1904. There will then be an over-supply and some of these men will be forced into rural practice by economic necessity. Incidentally, it

will, on the whole, be the less skilled graduates who will settle in the country. The rural population will have an inferior type of physician.

This proposal coolly sets hard and fast economic laws at defiance. You may be sure that, as soon as this scheme is in operation and medical graduates are forced to go in considerable numbers to the hardships of rural practice as it exists to-day, the overcrowded condition of the profession will soon become common knowledge and the number of men entering the study of medicine will be cut down. You are no longer taking men from the high schools or even without a high school education into the medical school. The profession is now recruited from college students and college students are fairly well informed as to the relative chances of success in the various vocations of life. The plan in question will defeat its own end and may be dismissed from consideration for what it is,—a dream pure and simple, impractical and fantastic.

Nor can we treat with greater seriousness the suggestion made in various forms but always boiling down to the proposal that we have a high grade medical school to train men for city practice and a low grade school to train men for rural practice. Those engaged in medical education have a right to depend upon every physician in practice to combat at all times the idea that the rural general practitioner need not be as good a physician as the general practitioner in our cities. The medical school is not doing its duty unless "every man graduated therefrom is trained to bring to his patient the very best of diagnosis and treatment possible for a general practitioner in the existing state of the science and art of medicine." It makes no difference whatever whether that patient lives in the city or the country; and the medical profession, which is primarily the guardian of the public health, fails in its duty unless it actively promotes this gospel among the people.

Nor do I feel hopeful of the success of the proposition to pay for the education of medical students on condition that these subsidized men will settle in the country for a certain period after graduation. Unless you give the Governor or the State Board of Health or some other governmental agency what none of them will seek, namely, the power and duty to loccate these men where they are most needed—which will usually be the posts of greatest hardship—you will hardly meet the real difficulty; and I know of no law successfully limiting or denying the right of a free American citizen to live where he chooses.

Another proposed remedy fails to solve the real problem although it will contribute something to the final solution. I refer to the extension of rural public health service, including rural district nursing and rural social service. With the cooperation of these agencies one physician can care for a larger rural population and we shall be able to get along with fewer physicians than would otherwise be needed. We would also have a more efficient rural medical service. But neither the health officer, the sanitary inspector, nor the nurse can take the place of the physician and our real trouble arises from the fact that new physicians are not settling in the country. Nor is there any reason why the same factors which make rural medical practice unattractive to our medical graduates would not be equally operative in the case of health officers and nurses.

The Real Difficulty in Supplying Rural Medical Needs.

Most of these futile measures are based on the assumption that we are to continue to have the present inadequate supply of physicians. I have shown that statistics prove that this condition is temporary; that in three years we may expect to graduate four-fifths as many physicians as we ever graduated. *The responsibility of the medical school in the solution of the problem of rural practice ends when it graduates enough men annually to meet the needs of the population*, and the medical schools will be doing this in a very few years.

We may as well be honest about this matter,—honest with ourselves and honest with our rural population. Every physician knows perfectly well that men will not go into rural practice in adequate numbers until, under improved conditions of rural practice, first, they are able to do full justice professionally to their patients; second, until they earn a reasonable livelihood from the practice of their profession; and, third, until the physical hardships of country practice are ameliorated. The first of these conditions involves the estab-

lishment of small local hospitals in which ill patients may be treated when home conditions render proper diagnosis and treatment impossible. The second condition is a question of finance and in places probably involves some scheme of health insurance. The third condition is virtually the issue of good roads in this state of Virginia.

Good Roads the First Sine Qua Non of an Adequate Supply of Rural Physicians.

At first sight it might seem that medical training and good roads are rather unrelated subjects; but Virginians may as well understand that so long as the rural physician must struggle through mud in order to bring to his patients the best he can under the circumstances—but knowing full well that this best falls far short of what he could and would gladly do for them professionally,—so long as these conditions continue, no medical school can deliver its goods to the rural population.

We may as well use plain words in this matter. The closed and especially the closed heated automobile would remove nine-tenths of the difficulties and hardships of rural practice; but this car and mud roads do not go together. In the recent discussions of the Booker-Hurt bill in the Legislature Senator Downing indulged in a glowing eulogy of the old time country doctor of the mud road, the saddle and saddle-bags, and charged Senator Goolrick with indifference to the medical needs of the country people. Senator Goolrick replied that in pressing measures for the construction of a good road system in Virginia, he was working more effectively to bring doctors to the rural population than he could possibly do in any other way. And in that reply Senator Goolrick hit the nail squarely on the head.

Virginians and especially rural Virginians who call for doctors in the country districts at the same time that they oppose a bond issue for a good road system had better take notice of another fact. South of us North Carolina and north of us Maryland and Pennsylvania are not self-bound hand and foot by the "cash and carry" system in providing capital for urgently needed public improvements. They are issuing bonds and are building good roads. Virginia has before her the question of a bond issue for the same purpose. Suppose this proposal is defeated and Virginia gets her good roads in fifty years while her adjacent sister states get theirs in five years. In what states will the medical graduates who are ready to go into rural practice settle? If our rural population wants medical service (and good modern medical service at that) let them get busy with their legislators and put through this bond issue. *They may as well understand that otherwise the rural medical situation will grow worse and no power on earth can make it better.*

The italicized words in the last sentence deserve brief elaboration, for the situation we are facing is not that fewer men are going into rural practice than formerly; not that the number of men settling in the country has decreased by twenty or forty or fifty per cent: but *that virtually none of our present graduates are doing this, and virtually none of them will do it* until the conditions of rural practice are improved. As the heroes of the mud road and the saddle-bags die off, none take their places. It requires no imagination to see that in ten or twenty years there will be almost no rural physicians left.

The modern medical graduate is not mercenary. He generally finishes his course in debt, and in view of this fact he cannot afford to be a missionary at his own expense; he has prepared to render a highly skilled service and he is going to work where he can give this highly skilled service—not an inferior service—to his fellow man. He will not and should not sacrifice his ideals of professional service to impossible Virginia mud. Remove the real trouble—and it can be removed by issuing bonds and building good roads—and I can assure you the problem of rural medicine will be solved.

Discussion.

Dr. J. B. DeShazo, Ridgeway: There is just one suggestion about supplying the rural population with doctors: that is for each district to vote a certain amount, to be a regular salary for a physician to practice in that community, in addition to what he gets from his regular fees. This, I think, is the only way it can be done.

OBSERVATIONS ON DIPHTHERIA IN VIRGINIA.*

By A. H. STRAUS, Richmond, Va.
Director of Laboratory, State Board of Health.

The annual report of the Virginia State Board of Health for 1921 brings out the rather

*Read at fifty-third annual meeting of Medical Society of Virginia, at Norfolk, October 31-November 3, 1922.

interesting fact (Table I) that there has been, during recent years, no steady decrease in the deaths from diphtheria as there has been in many other diseases, as for example, typhoid fever. This is true, in spite of the fact, that diphtheria is one of the best understood of the communicable diseases. The organism causing it is known and can be readily identified; quarantine can be put on a scientific basis instead of a guess-work period of time; we have a curative serum, antitoxin, invaluable for treatment; the harmless operation of intubation for laryngeal cases; the Schick test for determining the susceptibility of individuals; preventive inoculations of toxin-antitoxin mixture, etc. Yet, with all of this knowledge available, more died in 1920 and in 1921 than in 1913.

The big factors that cause some years to be "bad" diphtheria years while others are comparatively "good" are not known. Nevertheless, there is much knowledge available that is not being used. In comparatively few cases are cultures submitted before release from quarantine. Yet we know that this is the only method by which the duration of the infection can be determined. Likewise, diagnostic cultures are frequently not submitted, with the result that many persons, diagnosed as having only a "mild sore throat," are turned loose on the community as carriers of virulent diphtheria bacilli. It is the importance of these factors that we particularly wish to emphasize in this paper.

For me to mention to you physicians the importance of the prompt administration of antitoxin, the value of intubation, and other clinical matters would be presumptions. I shall, therefore, confine myself to the viewpoint of the laboratory and public health worker.

TABLE I.

Year	1913	1914	1915	1916	1917	1918	1919	1920	1921
Number of Deaths in Virginia	302	340	374	316	221	216	278	334	367
Death Rate per 100,000 in Va.	14.2	15.8	17.1	14.2	9.9	9.7	12.1	14.4	15.6
Death Rate per 100,000 in Registration Area	18.9	17.9	15.7	14.5	16.6	13.8	14.7	15.3	

TABLE II.

Showing the Number of Diphtheria Deaths, the Diphtheria Death Rate and the Number of Cultures Examined by Public Health Laboratories in 1921.

County or City	Number of Deaths	Death Rate Per 100,000	Number of Cultures Examined
State Total	367	15.6	15,803
Bristol	5	72.5	1
Buchanan	11	68.2	0
Radford	3	64.0	2
Washington	19	58.8	6
Powhatan	3	45.5	2
Appomattox	4	43.0	0
Tazewell	12	42.4	25
Nottoway	6	42.0	27
Hanover	7	38.2	127
Princess Anne	5	35.4	0
Dickenson	5	35.2	0
King George	2	34.8	1
Rockbridge	7	34.0	3
Russell	9	33.2	18
Franklin	8	32.2	8
Alleghany	5	32.2	47
Scott	8	32.1	0
Montgomery	6	32.0	4
Greene	2	31.4	0
Bath	2	31.2	137
Henry	3	29.2	5
Isle of Wight	4	28.2	6
Danville	6	27.3	1351
Richmond County	2	27.0	8
Roanoke	14	26.6	1055
Roanoke County	6	25.5	63
Grayson	5	25.2	1
Mecklenburg	8	25.2	195
Craig	1	24.2	4
Fluvanna	2	23.3	3
Pulaski	4	23.2	4
Sussex	3	23.2	4
Floyd	3	22.8	6
Wise	11	22.7	4
New Kent	1	22.0	11
King and Queen	2	21.8	1
Dinwiddie	4	21.7	27
Highland	1	20.3	0
Accomac	7	20.0	79
Amelia	2	20.0	76
Loudoun	4	19.5	73
Wythe	4	19.5	308
Halifax	8	19.2	24
Pittsylvania	11	19.2	2
Spotsylvania	2	18.7	5
Bedford	7	18.2	7
Botetourt	3	18.1	6
Patrick	3	17.8	0
Louisa	3	17.5	8
Arlington	3	17.5	*
Giles	2	16.8	1
Warwick	2	16.6	0
Alexandria	3	16.5	97
James City	1	16.3	7
Clifton Forge	1	16.1	6

*Cultures examined by Hygienic Laboratory number not available.

County or City	Number of Deaths	Death Rate Per 100,000	Number of Cultures Examined
Petersburg	5	15.6	844
Nansemond	3	14.7	7
Southampton	4	14.4	25
Chesterfield	3	14.3	64
Augusta	5	14.3	90
Winchester	1	14.2	12
Clarke	1	14.0	4
Prince Edward	2	13.5	10
Smyth	3	13.4	1
Lunenburg	2	12.8	7
Caroline	2	12.6	38
York	1	12.3	62
Essex	1	11.7	104
Lee	3	11.7	0
Greenesville	1	11.6	16
King William	1	11.4	23
Goochland	1	11.3	48
Campbell	3	11.0	18
Surry	1	10.7	3
Madison	1	10.4	1
Lancaster	1	10.3	0
Amherst	2	10.0	5
Rockingham	3	10.0	12
Richmond	17	9.7	6455
Brunswick	2	9.4	2
Northumberland	1	8.6	10
Frederick	1	8.0	4
Culpeper	1	7.5	7
Prince William	1	7.2	5
Page	1	6.7	6
Norfolk County	4	6.4	1
Buckingham	1	6.3	1
Charlotte	1	5.6	1
Portsmouth	3	5.4	437
Carroll	1	4.7	1
Fairfax	1	4.5	211
Elizabeth City	1	3.8	15
Norfolk	4	3.3	2190
Lynchburg	1	3.3	481
Newport News	1	2.6	276
Albemarle	0	0.0	20
Bland	0	0.0	2
Charles City	0	0.0	9
Cumberland	0	0.0	6
Fauquier	0	0.0	14
Gloucester	0	0.0	0
Henrico	0	0.0	152
Mathews	0	0.0	0
Middlesex	0	0.0	4
Suffolk	0	0.0	10
Nelson	0	0.0	2
So. Norfolk	0	0.0	5
Northampton	0	0.0	37
Orange	0	0.0	46
Hopewell	0	0.0	4
Prince George	0	0.0	4
Rappahannock	0	0.0	0
Harrisonburg	0	0.0	16
Shenandoah	0	0.0	33
Stafford	0	0.0	0
Warren	0	0.0	9
Buena Vista	0	0.0	2
Charlottesville	0	0.0	4
Fredericksburg	0	0.0	31
Staunton	0	0.0	41
Westmoreland	0	0.0	0

A careful study of Table II brings out some very interesting facts. If this table is divided at that point, Petersburg, where the death rate is the same as the average of the entire state, we observe:

1st. That localities containing 42% of the population of the state had a death rate higher than the state as a whole.

2nd. That this same 42% furnished 274 or 75% of the diphtheria deaths for the entire state.

3rd. That this portion of the population, though having 75% of the diphtheria deaths, submitted less than 25% of the cultures examined by the various public health laboratories of the State. That is less than half of our population have three-quarters of all our diphtheria deaths and submit less than one-quarter of all cultures.

It is evident, therefore, that those places having the highest diphtheria death rates submit comparatively few cultures for examination. A glance at the top of Table II is sufficient to verify this. Hanover County might appear to be an exception. However, our records prove that it is not, since only 8 of the 127 cultures submitted came from the localities having the 7 deaths. Over 100 cultures came for Ashland and vicinity where there were no diphtheria deaths. That is, this community in the center of a diphtheria outbreak, apparently of considerable proportion, did not lose a case, though deaths occurred on all sides in the county. Of course, I do not mean to imply that the taking of cultures prevented the deaths, but the taking of cultures is apparently associated very closely with the successful handling of diphtheria cases in Virginia.

The question, therefore, before us is, "why do communities leading in diphtheria death rates submit comparatively few cultures?" The answer I had expected to make before I began this study was that such a community was usually remote from a laboratory and the cases difficult to reach, but such an explanation, though kindly, is unfortunately rarely true. Taking the three places at the top of our list we find that two of these are towns and one a mountainous county. Remoteness might explain the high death rate in Buchanan County, but it would hardly explain the situation in the towns of Radford and Bristol. Diphtheria in a town means rapidity of spread due to close communica-

tion, but it also means, or should mean, every facility for the prompt and efficient handling of cases. When a town has a diphtheria death rate of 72.5 and submits 1 culture for examination during the entire year, comment would seem superfluous.

Therefore, since remoteness and difficulties of transportation fail to answer our question we must seek further for an explanation. After studying the situation I believe that the failure to take cultures frequently indicates carelessness in other directions also, and that this carlessness is largely responsible for a high diphtheria death rate.

I often hear physicians say "I have no time to take cultures; in all supicious cases I give antitoxin." This may sound reasonable, but what are the facts? In the first place, he has time to take a culture—two or three minutes at the most. Furthermore, he often fails to report these cases or to quarantine them. In case of quarantine he releases his cases without cultures and, therefore, often while they are still carriers. He fails to pick up mild cases, which later become carriers. The physician who doesn't check up his work and verify his results whenever he can is usually lazy and careless, and he is responsible only too often for laxity in others.

We do not advocate waiting for a swab report before giving antitoxin, but we do urge taking the swab just the same. We know that a negative laboratory report may sometimes be in error, but not very frequently. We furnish laboratory service in diphtheria because we are convinced that it is of great usefulness in controlling the disease and we notice that when a physician once begins to use this service he continues to do so.

If a physician finds that a certain type of throat that he has called "suspicious" and given antitoxin always comes back negative then he has eliminated one source of error.

If on the other hand some of his "slightly suspicious" throats turn out to be diphtheria he has certainly gained in knowledge, even though the case should be practically well by the time the report is received, and the community would be saved another focus of infection. Likewise, if antitoxin is given in a "mildly suspicious" case and the report comes back positive, then he continues on his way with a feeling of greater confidence in his own practice. The laboratory, when possible, always reports other findings than diphtheria, such as the presence of streptococcus and Vincent's angina, which we believe sometimes aid the physician.

We are aware that many sections of the State are a long ways from our laboratory. We have endeavored to overcome this by improved facilities for getting our mail, as well as sending it out, and by a night examination of cultures reaching us in the morning. In spite of this, however, the service is often unavoidably slow. Many of our progressive municipalities now have their own laboratories, which relieves the situation somewhat, but much further development is needed. I hope to see the day when every community will have its own local laboratory with the Central State Laboratory as a co-ordinating center.

In one community, Wytheville, diphtheria was prevalent last winter. The physicians of their own volition began a rigorous school inspection, cultured all sore noses and throats, isolated the carriers and quarantined them until negative cultures were obtained. The epidemic was soon brought under control and, though Wythe County had 4 deaths from diphtheria, none of these were in Wytheville and only one in that vicinity.

In conclusion, we wish to state that we know good luck and not great care saved some communities from having a higher diphtheria death rate. We also know that greater care would have lessened the death rate in practically all communities.

As the first steps, when diphtheria, or suspected diphtheria, appears we advocate:

1st. Education of the people, particularly as to the importance of calling in the doctor promptly for all sore throats.

2nd. That the physician culture all sore throats and noses, regardless of how mild they may appear to be.

3rd. The immediate administration of at least 10,000 units of antitoxin in all suspicious cases without waiting for a report on the culture; the use of antitoxin in all mild cases to avoid later complications, and plenty of antitoxin in severe cases.

4th. The quarantine of all cases, regardless of severity, until proven negative by at least one culture and preferably two. It is also desirable to culture all children in the house with a case before allowing them to return to school, as carriers among such children are not uncommon.

DISCUSSION.

DR. C. F. GRAHAM, Wytheville: I happen to be one of the physicians at Wytheville where there was an epidemic last year between the first day of November and the 23rd day of December. In fifty-three days there were fifty-three cases of diphtheria in the town of Wytheville and the surrounding country for a radius of 5 miles. We were very proud of the fact that there were no deaths.

Most of these cases developed in the public school, in the children of school age. The doctors got together and every morning before school opened we went up to the school and inspected every child's throat. From any children that showed any evidence of exudate in the throat, we had swabs taken and sent to the State Board of Health. We had Mr. Straus come up and cultures were made of all children in the rooms where the diphtheria was most prevalent. The first few days it looked as if we were not going to get much in the way of results. All the swabs taken in the two rooms in which there were most cases of diphtheria proved negative. But we kept up this inspection, and in a few days there was one child who had no temperature, perfectly normal pulse, no symptoms of any kind except just a little white spot about the size of a pin head on one of the tonsils, but the swab proved positive. That child was isolated at home the same as a diphtheria case; she was not given antitoxin because she never showed any signs of needing it and got all right from local treatment.

The State Board then instructed us to go into the homes in the section of the town where diphtheria was most prevalent and look after the children of pre-school age. This was done and in one home there were found three cases, all of nasal diphtheria, that had been going on for some time and had had no physician. One of these was of school age and had been going to school off and on every few days, would come home with a sore throat, get all right and go back to school again. This case was not at school the day the cultures were taken, nor was she present during the two weeks of inspection. These four carrier cases were isolated and treated, and the epidemic stopped almost as quickly as it started. That was the result we obtained by systematic examination.

DR. W. A. PLECKER, Richmond: This is another condition, like peritonitis, in which we can not rely on our vital statistics, especially from the mountainous counties. We are greatly in need of better statistics on diphtheria. As Dr. Hough brought out in his paper, there is a deficiency in the number of rural physicians. Many children die without any doctor, and when these death certificates reach us a very large percentage of them give the cause of death as croup when there was no diphtheria croup. When we send these transcripts to the Bureau of the Census in Washington, and they see croup, it goes to diphtheria, thus increasing our diphtheria rate.

Dr. ————: I would like to have Mr. Straus tell us what he thinks of active immunization as a general procedure, whether he favors it or not. Also, if I am correct in believing that toxin-antitoxin immunization gives at least five years of practical immunity, and whether he believes all children should have active immunization in the schools.

MR. A. H. STRAUS, (closing discussion): In reply to the last question, we have done no work here in Virginia on which to base an opinion. The principal work in this direction, I think, has been done in New York City, where, apparently, they have met with excellent success.

The general opinion that I have heard expressed is that it will carry the child over the period of greatest susceptibility. As we know from the Schick test, the older age groups are much less susceptible, and those who are advocating its use state that it will carry the child through this period of maximum susceptibility.

I do not believe that we would be justified in advocating its use in a wholesale way in the schools, although I can't see that any harm would be done. In order to be of value it would have to be started before diphtheria appeared in the school. After diphtheria is in a community it is too late to do very much in the administration of toxin-antitoxin as it takes from one to several months to produce immunity. So to be effective it would have to be started in the fall when school first opens. When diphtheria is once prevalent you are not going to help the situation a great deal unless all sorts of other measures are used in conjunction with it. In the household where a case of diphtheria develops you will have to continue always to use the immunizing dose of antitoxin.

CHANGES IN A SMALL TOWN BROUGHT ABOUT BY THE HEALTH DEPARTMENT.*

By B. B. BAGBY, M. D., West Point, Va.

The State Board of Health was re-organized in 1907 with Dr. E. G. Williams as Chairman. Since that time our summer practice has become very different from what it was previous to that time. But so gradual has been the change that few of us realize how great it has been.

I have kept a careful record of all my patients since I began to practice medicine. I moved to West Point in the spring of 1909. It is interesting and surprising to note the change that has taken place in my practice since that time. Recently, I have tabulated all of the *town* cases that I had during the five summer months of 1909 and compared them with the same five months of 1922. You notice that I say my *town* practice. I have left out my country practice as the Ford car has made too great a change in my country practice for me to take that into consideration.

TYPHOID FEVER, MALARIA AND CHOLERA INFANTUM DISAPPEAR.

During the five summer months of 1909 I saw 158 town patients. During the same period of 1922 I saw 202 town patients. Of the 158 patients seen in 1909, 96 had well defined cases of malaria, with chills, fever, sweats, etc.; 15 had cholera infantum, ileo-colitis, or dysentery, with two deaths; and seven had typhoid fever, making a total of 108 cases out of 158 that should have been prevented.

During the five summer months of 1922 I

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

did not have in town a single typical case of malaria, typhoid fever or cholera infantum. I had one atypical case of malaria that was most probably contracted out of town. I had only one case of ileo-colitis that lasted over five days and this was the only case of dysentery or infectious diarrhoea in town this summer. And there has not been a case of typhoid fever in West Point since February, 1919. Dr. A. S. Hudson, the other physician in West Point, says he has not had a case of malaria, cholera infantum or typhoid fever this summer. So malaria, typhoid and infantile diarrhoea have about disappeared in West Point.

Typical Sanitary Conditions of 1909.

In 1909, our city fathers boasted of having the healthiest town in the State. But let us see how very unsanitary it was. Not a dwelling in town was completely screened. The negroes and poorer people had no screens at all. Every dwelling in town had an old fashioned open privy. No thought had ever been given to draining the marshes to rid the town of malarial mosquitoes; and the chief dairyman of the town spent a part of every night cleaning out the open privies. The contract for cleaning these was let to the lowest bidder, and the dairyman took the job at a very low figure as he needed the refuse to fertilize his dairy farm land. He did his scavenger work late at night or early in the morning and went directly from that work to milking his cows, bottling and delivering milk. This was done with the full knowledge and consent of the town authorities for several years before I came to West Point.

Modern Sanitary Methods Applied.

Now 80% of our milk is put up under thoroughly sanitary conditions. Even the poorest negro tenements of our town now have good window and door screens. The town and State authorities spent about $6,000 a few years ago to drain our marshes and there has not been a single case of malaria contracted in our town since that time.

Four years ago our town put in a complete water and sewerage system and the law now compels every house to connect with this system. Our water comes from artesian wells about 400 feet deep and is almost sterile. It is as perfect a water and sewerage system as could be obtained. The improvements in the health of our town have paid us (the citizens) many times over for the money expended in putting in the water works and draining our marshes.

To get these results has been no easy task. As soon as I moved to West Point I determined to get every home in town screened and I began to urge each malaria patient to take quinine for eight weeks after missing his chill. This brought down the malaria cases very rapidly. But it would have been impossible to have eradicated the disease if the State Board of Health had not helped us to drain our marshes.

Results Justify the Work.

We work so hard and apparently accomplish so little from day to day for the betterment of humanity that all of us at times get discouraged in our work. But after looking over my records of 13 years I am made to feel that our work in West Point has not been in vain, but rather a great blessing to humanity. And I am sure that ours has been the experience of many other physicians and towns in Virginia. I have not found a case of hookworm in five years. When I began to practice medicine in 1904, some sections in King and Queen County showed a hookworm infection of nearly 100% among the school children, and many adults were sallow, anaemic, sick and thin. Thanks to the State Board of Health these same people are now healthy, prosperous and happy. I know of several families of prosperous farmers that are now enjoying touring cars of their own, who a few years ago, on account of hookworm, were more or less dependent on charity.

More Work to be Done.

But our health work has only begun. We still have in my country practice many privies that are not fly proof; many wells that are open; much stagnant water that should be drained; and many dwellings that are not properly screened. Only a very small part of the population has been vaccinated against typhoid or diphtheria. At least 75% of my rural practice still have infected teeth or tonsils, and need a great deal more education to convince them of the injurious effects of these infections. Nothing has been done to eradicate syphilis, the most fatal of all infectious

diseases. Syphilis has caused more deaths in my practice in West Point than the following diseases all combined: measles, mumps, whooping cough, chicken pox, smallpox, diphtheria, scarlet fever, true pneumonia, malaria, and typhoid fever, and several more deaths than tuberculosis.

County Health Officer the Great Need of Rural Virginia.

There is greater work than ever for the health officer. We hear a great deal about the need of country physicians. The Legislature appropriated last year $5,000 a year to the University of Virginia to educate rural physicians. We may need a few more rural physicians in other parts of the State: none are needed in this section. But we do need very badly more rural health officers. The people in my section that are crying loudest for more rural physicians are the ones that are most bitterly opposed to employing a county health officer.

If we had a competent health unit in each county, instead of needing more rural physicians, we could do away with many that we now have, and our people would be far healthier and much better off financially.

I predict that the time will soon come when each county will have a complete public health unit. And then typhoid fever, cholera infantum, smallpox, and hookworm will in time be completely wiped out of Virginia and syphilis, tuberculosis, diphtheria, rheumatism, and arteriosclerosis will be on the rapid decline.

If each member of this Society will do his best to help the State Board of Health, this goal will be reached much sooner than many of us now even hope.

THE LAYMAN IN PUBLIC HEALTH.*

By ROY K. FLANNAGAN, M. D., Richmond, Va.
Assistant State Health Commissioner; Director Rural Health Work.

Prevention.—Prevention is the keynote of social progress, the song of the century, and everybody who is not a croaker is singing it. To fail to join in the chorus is to place oneself in the category of the "voiceless" of whom old Dr. Holmes wrote, "Alas for those who never sing but die with all their music in them." Every newspaper, every magazine, and every group functioning in the public interest is singing this song and the keynote rings clear.

The wastefulness of waiting for injurious effects to appear and then applying the remedy has become plain to all enlightened folk, and better plans are being made. Though the attempts of this generation to apply the preventive principle to all departments of social development have, by reason of the experimental nature of the methods employed, not always proven completely sucessful, all will agree as to the desirability of the aim.

Illustration.—To give a few instances among many. The experiment is being made in the

Prevention of War by the formation of a League of Nations which proposes by practical means to bring about universal peace.

Prevention of Fire by public education and organization instead of devastation and economic loss.

Prevention of Drought by reforestation, impounding water and irrigation, instead of blasted crops and overwhelming floods.

Prevention of Accidents by safety devices and Safety First propaganda, instead of elaborate preparation for taking care of the injured.

Prevention of Drunkenness by prohibition, instead of inebriate asylums and debauched and wasted lives.

Prevention of Poverty by bringing about social justice instead of almsgiving and poorhouses.

Prevention of Delinquency by a probation system and juvenile courts instead of reform schools and houses of refuge.

Prevention of Crime by humanizing our courts and our police forces, and providing a system of prison farms instead of jails, chain gangs and penitentiaries.

Prevention of Feeblemindedness and Insanity by segregation, sympathetic treatment and the application of eugenic principles, instead of the perpetuation of dependents in ever increasing ratio.

And most important and more or less intimately related to all of the above:

Prevention of Disease and Premature Death by sustained attack upon causes, instead of the old time acceptance of sickness as a visitation of Providence or the Devil.

Opposition.—Like all new ideas that have, since man first began to think, been responsible for human progress, the preventive idea

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

has encountered and still is forced to fight all the forces of reaction, Ignorance, Selfishness and Bourbonism being the leaders of the opposition always.

The seemingly Utopian character of many of the preventive schemes proposed and the impossibility of their approximate realization within reasonable time has furnished ammunition to the enemies of all progress. Even organization for the prevention of disease and death, the most appealing as well as the least experimental of all schemes for human welfare, makes headway under constant fire.

That medical men should be found arrayed in the enemy's camp, would seem to be unthinkable, and yet there are instances of active opposition from doctors of apparent good standing.

Application.—The need for the application of the simplest principles of sanitary science is generally apparent to those who visit the smaller towns and villages throughout the state.

It is not even necessary always to go beyond the city's precincts, for many of our cities are flagrantly remiss in their support of health work, one-half of the cities of Virginia today have no health department in the modern meaning of that term. Richmond, Norfolk, Portsmouth, Newport News, Petersburg, Lynchburg, Roanoke, Danville, Alexandria, Charlottesville, Suffolk and South Boston, (11 cities and 1 town) have health officers giving their whole time and thought to measures for the reduction of preventable sickness. The rest of Virginia's cities and towns have more or less make-shift health organizations under the ostensible direction of busy medical men inadequately paid for part time service. I submit that this state of affairs is a reproach to the state in general and to the medical men in those cities in particular.

Inception.—Health work in Virginia owes its inception and development to devoted physicians. Where the doctors of a given city have combined to effect an adequate health organization they have been able invariably to secure it. This was true of the Richmond Health Department in 1906, and almost all health departments in Virginia since have owed their birth to medical initiative with the exception possibly of the few in extra cantonment zones, hastened in their development by war emergency.

Progression.—If progress has been slow in the cities, what may be said about rural Virginia? There are today nine organized county health departments in the state with whole time health officers in charge, most of them having one or two whole time sanitary officers and one or two public health nurses on the staff. These are Norfolk, Augusta, Fairfax, Arlington, Albemarle, Halifax, Wise, Russell and Nansemond. Twelve other counties have supervised lay health men paid for their whole time. These are Chesterfield, Charlotte, Greenesville, Prince Edward, Henry, Smyth, Carroll, Mathews, Grayson, Pulaski, Roanoke and Wythe. Nine of these also have public health nurses in addition.

The following counties have public health county nurses operating in them, supported in the main by local welfare organizations: Loudoun, Hanover, Essex, Louisa, Amherst, Powhatan, Elizabeth City, Clarke, Smyth, Princess Anne, Prince George, Accomac, Bedford, Frederick, Mecklenburg, Shenandoah.

This leaves 63, or approximately 2/3 of Virginia counties unprovided with any workers devoting their entire time to improving health conditions.

It is no small thing to have induced 37 counties within the period of the 14 short years of the State Board of Health's existence to provide mainly from their own funds some form of paid health work, and the State Board of Health is proud of the record.

Anticipation.—When, however, we consider that the majority of the children in two-thirds of Virginia's area are now growing up with only haphazard arrangements for the correction of their physical defects, and with no agency systematically at work to stimulate the construction of sanitary conveniences or improve the many dangerous sources of water supply, with no official organization regularly employed to deal with epidemics or plan for the reduction of the death rate, it is glaringly apparent that those who hinder the development of plans for furnishing relief of such a situation will most certainly be pushed aside.

Definition.—Disease prevention as you all know involves on the part of the health officer roughly—

1. A knowledge of the presence of infectious disease as soon as possible after it occurs, and the ability to apply quarantine and release, and to induce immuni-

zation and treatment in proper cases.

2. A knowledge of how and where to find breeding places of disease and the ability to abate or direct the abatement of them.

This involves among other things questions of sewage disposal, water supply, milk and food inspection, mosquito control, child welfare, school inspection, organization of corrective clinics, and a thoroughgoing educational campaign in the interest of all phases of the public health, with an active, persistent and progressive effort to get results in a reduction of disease and death.

Assumption.—It has always been impressed upon the public that the medical man is alone qualified by training to attend to disease control measures. That was undoubtedly true at the time when many, perhaps most of us, gained our medical degrees. No other class of men 10 years ago were so well qualified as we to do public health work. We were supposed to know infections disease when we saw it: we were supposed to be trained in a knowledge of the causes of infectious disease; consequently we assumed before the public the attitude, and the public accepted the assumption at its face value, that what we did not know about how to prevent these infectious diseases was not worth knowing. This, I believe, is a fair statement of the case. I know that is the way I felt about it when I first took up public health work. Now, what really are the facts?

Qualification.—Practice is supposed to make perfect, is the training of the doctor, the real training I mean, the training and practice he gets in doing his job of healing the sick;—is this training such as would qualify him to deal with the sordid causes that bring about that sickness?

Can he concentrate his attention on the community side of his patient's disease and do justice to the patient at the same time? Entirely aside from all mercenary considerations, which, since the doctor is human, must frequently arise, the feat is almost impossible.

Devotion.—All of us prefer as our personal physician one who is singleminded in his profession and we are apt to call that one into our family whom we deem most devoted to his patients. In the emergency of personal or family illness the public welfare can go hang so far as we are concerned and the doctor who is officially or unofficially most concerned about the community welfare is not usually desired at that time, however, we admire his public spirit at other times. This is also the attitude of the public. The profession of medicine, is a hard taskmaster, so, also, is the profession of Public Health.

Limitation.—The doctor has never qualified as a privy builder, and sanitary privy building is the first job of a town or county health officer. The doctor cannot be expected to know much about the latest development in scavenger service, and you can be assured that there is much to be known. Medical practice does not provide a working knowledge of the best construction in septic tanks, or how to direct a laborer to build one.

The average doctor has given no thought to the best means of getting Farmer Jones to improve his water supply—the old oaken bucket type or wide open spring. He is slow indeed to cast reflections on such a time honored institution.

In the nature of things he knows little of modern methods of milk inspection, or mosquito control, or school inspection, or the organization of correctional clinics, or of publicity methods so necessary to arousing the people to the importance of public health work. It is seriously to be questioned too as to whether the doctor knows much about the detail of that intricate performance—the prevention of flies.

There is no question but that he can readily learn these things if he is not too old or set in his ways. It is not to be doubted, however, that he never successfully practices medicine and public health at one and the same time. The attempt to do so makes him more or less of a dub at both. The part time health officer cannot in justice to his patients or himself give proper service to the public, for it will always be true that "no man can serve two masters."

Action.—What then can be done? If the doctor does not act, who will? Let us see.

In engaging a person for a specific work it is recognized that the ideal person is hard to find, and if found is expensive, so we usually try to come as close as possible to our ideal with the means at command. Our means say, is $3,000 for salary and all other expenses —nothing ideal about that you will say. (It is worthy of remark, however, that most part

time medical health officers in the cities and towns of the state get much less). The great need is for someone to do the essential things in the control of disease. Is the first need a diagnostician? A medical health officer is rarely called in to diagnose a case—the family physician does that and is apt to promptly resent the questioning of his diagnosis. Health officer diagnosis, therefore, is rarely if ever necessary. This also rules out the immediate necessity of establishing a local laboratory, since the physician is supposed to secure all practicable laboratory tests in making his diagnosis. If infectious disease is discovered the doctor reports the case to the health officer whose business it is to take appropriate action. In using our $3,000 then, the part of wisdom from the standpoint of the public would seem to be to employ some sensible person to take action who is willing to give his whole time for $1,800 or $2,000 a year, with the rest for expenses.

Sanitation and Hygiene.—It is common knowledge that a non-medical man can apply quarantine, can secure culture specimens from the family physician when necessary, can advise school authorities as to the presence of contagious disease, can prosecute, can abate nuisances with disinfectants and a spade, if necessary, can enforce sewer connections and construct septic tanks, can organize privy campaigns and build privies, if necessary, throughout unsewered areas.

He can organize an efficient scavenger service. Without fear or favor he can apply the law, for cleaning up the town or the county is what he is paid for.

He can even advise and insist upon closing the sacred old well or spring without mortally offending a good paying patron.

Without technical knowledge he still can greatly improve the milk and food supply by frequent inspections.

Mosquito control, organization work for school clinics and a comprehensive public health publicity campaign do not require medical knowledge and the kind of talent capable of doing work of this character may be obtained for much less than a good doctor can afford to take.

Reputation.—No doctor who values his professional reputation can afford to give inadequate public health service in the present state of the public mind. The public is informed and is clamoring for adequate health protection, and the doctor must in justice to himself refuse the attempt unless he is prepared to give his whole time to the job.

If he will not make the sacrifice then let him recognize the possibility of a non-medical man giving fine service at a lower cost, and back such a man to the limit. A lay health officer trained in a good health department offers to my mind the best available solution to the town and county public health problem.

Such a man would under state law act always in subordination to medical boards of health, and consequently the dangers of grave mistakes on account of lack of medical knowledge would be greatly minimized.

Demonstration.—Is this an impossible program? My answer is that in a number of places in Virginia it is working successfully. In Henry County, in Chesterfield, in Charlotte, in Carroll, in Prince Edward, and in other counties, the State Board of Health having been under the necessity of organizing some kind of service has wisely cut the garment according to the cloth. On a budget of from $2,500 to $3,000 yearly, the counties are being gradually sanitated and educated to demand and pay for a greater and greater degree of public health protection. If they had waited until they could pay for adequate medical health service the children of the present day in these counties would die of physical disability or of crippled old age, instead of as at present receiving a large measure of corrective attention. Hookworm, typhoid fever and dysentery would still take their usual toll instead of yielding steadily to systematic sanitation.

At least one-third of our counties will not in this generation be in position to pay for adequate medical public health service. These counties must be given better attention than they are now receiving, the towns of the State must also deal with their health problems in the same way.

Let us, therefore, develop in this state a sufficient number of practical sanitarians to meet our needs.

Cooperation.—The State Board of Health confidently counts upon the medical profession of Virginia's cooperation in its efforts to bring to every spot in our state *some*, if not all of the public health benefits enjoyed by those parts wealthier and better favored.

Dr. W. E. Anderson, Farmville: The system is working well in Prince Edward County, where I have been medical health officer for some time, and I am heartily in accord with the man who is doing the work.

I arranged last year, through the State Board of Health, to have the county nurses do the vaccination work in the schools. They can do that detail work more efficiently and more economically than I can do it.

I particularly want to emphasize the great amount of good this man can do going from house to house looking after sanitary conditions. I will enthusiastically co-operate with any health officer, because it is one of the most important fields connected with our profession.

OXYGEN SUPPLY AND DEMAND IN GENERAL ANESTHESIA.*

By ROBERT CAMDEN WHITEHEAD, M. D., Norfolk, Va.

The importance of an abundant supply of air to the patient during the induction and maintenance of general anesthesia has been realized since the earliest days of general anesthetics and care has been ever taken to avoid, as far as possible, any interference with the oxygen supply under these conditions. Physiological research has demonstrated that in health the supply of oxygen through the respiratory organs and the consumption of oxygen by the body chemistry, are of a certain standard according to the area of the body surface. Further, that in certain disease conditions the ratio between the oxygen supplied by the lungs and the oxygen required by the body metabolism is markedly reduced and that cyanosis and respiratory distress are more easily and readily induced in these patients than in the normal.

Two factors bear directly on this important point, viz., the vital capacity of the lungs and the rate of metabolism; for if the vital capacity of the lungs be reduced, the oxygen supply is diminished and again, if the rate of metabolism is increased the demand of the body chemistry for oxygen proportionately encroaches on the available supply. Under either of these conditions any displacement of the oxygen of the respiratory air by the addition of the vapors of the anesthetic administered, will further reduce the ratio between supply and demand and the point of oxygen deficiency, acute anoxemia, will be more nearly approached.

For years it has been known that persons suffering with certain respiratory and cardiac diseases, such as pulmonary tuberculosis, acute bronchitis, pleurisy with effusion, etc., and the organic diseases of the heart, are for various reasons bad anesthetic risks; that they early and easily become cyanosed and that danger of death from the anesthetic is increased. Again, patients with hyperpyrexia and toxic goitres at the crest of the toxemia have been placed in the same class. Operative measures in these cases are deferred, if possible, until these conditions are relieved.

The increased risk in these cases seems due in large measure to one underlying fault; to wit, the decreased ratio between the oxygen requirements of the body and the oxygen supply of the lungs.

Oxygen Supply.

Peabody and Wentworth in 1917 stated that the dyspnea of heart disease seemed to depend largely on the inability to increase the depth of respiration in a normal manner, and that this inability to breathe deeply corresponds to a diminished vital capacity of the lungs. They further show that in a classification according to height, there is in normal individuals a standard vital capacity subject to a variation of plus or minus 10%.

Wilson and Edwards in J. A. M. A., April 15, 1922, show from their investigations of 362 normal children between the ages of 6 and 16 years a standard vital capacity of 1.93 litres per sq. meter of body surface, or 15.5 c.c. for each centimeter of height. The average vital capacity in health is about 3,500 c.c. and is the air which can be expelled from the lungs after as deep a breath as possible. The normal inspiration, or Tidal Air, is on the average 500 c.c., which is sufficient to maintain the oxygen in the lungs at about 15%. In health, should the percentage of oxygen in the lungs become depleted, the loss is immediately made good by deep inspiration, without conscious effort on the part of the person. Should there be a diminished vital capcaity with the corresponding inability to breathe deeply in a normal manner, the deficiency must be overcome by increased frequency of inspiration.

Peabody and Wentworth have classified patients with heart disease according to the diminution of the vital capacity of the lungs as follows: Class (1) reduction 10% with few symptoms referable to the heart; Class (2) reduction 10% to 30% dyspnea on exertion; Class (3) reduction 30% to 60% dyspnea on

*Read at fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

moderate exercise; Class (4) 60% and over, cardiac failure.

In the *American Journal of Diseases of Children* (November 1921), Wilson and Edwards show the percentage of reduction of the vital capacity of the lungs in children suffering with various pulmonary and cardiac disorders as found in their investigations.

Tracheo-bronchial adenopathy	20-30%
Acute bronchitis	10-20%
Bronchial asthma—between attacks	0-30%
Emphysema	10-15%
Pleurisy with effusion	30-40%
Lobar pneumonia	40-50%
Pulmonary tuberculosis	30-50%
Organic Heart Disease class (1)	0-3%
class (2)	20-35%
class (3)	35-80%

It seems from these investigations that the diminished vital capacity of the lungs with its consequent interference with the proper oxygenation of the blood is a condition not infrequently encountered: and that the reduction in the oxygen supply may be so great as to seriously approach the point of the minimum oxygen requirements of the body metabolism. Under such circumstances, the administration of an anesthetic by further reduction of the respiratory oxygen supply, might easily overstep the point of safety, producing a definite oxygen deficiency.

Oxygen Consumption.

The study of the basal metabolism has shown that in certain diseases the body is consuming more oxygen than in health, due to the increased rate of body metabolism and that at times this is extremely high.

In hyperthyroidism and hyperpyrexia the metabolic rate is increased and in many other conditions there may be an increased rate of basal metabolism though not constant. In myxoedma and hyperthyroidism the rate is decreased. But it is not with the diagnostic import of the rate of basal metabolism that this paper has to deal, but with the fact that an increased rate of metabolism is an increased rate of oxygen consumption.

Briefly, the estimate of the rate of basal metabolism is the estimate of the calories produced per hour, per square meter of the body surface, for a given age and sex. This estimate is made, by the indirect method, by the measurement of the oxygen consumed in a given time and is expressed in percentage plus or minus.

A patient suffering with hyperthyroidism with say plus 50% basal metabolic rate is consuming in the same number of minutes or hours 50% more oxygen than that patient would consume in health. This increased consumption of oxygen results in an encroachment on the available oxygen supply, thereby reducing the ratio between supply and demand.

For about two years Dr. R. L. Payne has been using the closed circuit nitrous-oxide-oxygen anesthesia in operation on the thyroid gland and we have found by our studies of these cases that the oxygen requirements during anesthesia correspond closely to the basal metabolic rate; that those persons with increased rate require more oxygen in the respiratory circuit than persons with a normal rate; and that the percentage of increase in the oxygen required is approximately the percentage of increase in the rate of basal metabolism.

To illustrate: Mrs. T. came for operation for exophthamic goitre. Her rate of basal metabolism was plus 35%. Under nitrous-oxide-oxygen anesthesia, it was found that she required 40% more oxygen than the average person with no thyroid involvement. Any reduction of the oxygen below this amount was accompanied by cyanosis. Further, this increased amount of oxygen prevented the administration of sufficient nitrous oxide gas. When the nitrous oxide was pushed to the point of securing the required relaxation, the oxygen supply was encroached upon to such an extent as to produce dangerous symptoms. To overcome this complex, 1% ether was required to give the proper relaxation.

In certain cases both conditions which tend to reduce the ratio between supply and demand may be present. We may have existing pulmonary or cardiac disease, associated with hyperthyroidism; or a damaged heart associated with some intercurrent disease which has produced a marked rise of body temperature. In exophthalmic goitres of long standing the myocardial changes may be so extensive as to seriously cripple the heart and thus we would have a diminished vital capacity of the lungs due to the cardiac involvement plus the increased rate of oxygen consumption due to the thyroid toxemia. In these cases with the reduction of the supply and the increase of the demand, the ratio is more markedly diminished.

The whole structure of general anesthesia

is based on the possibility of administering to the patient sufficient anesthestic to induce the desired degree of anesthesia, at the same time allowing the patient to have sufficient oxygen to carry on the vital function of the body. In those cases where there is no reduction between the oxygen supply and demand this is accomplished with little danger but where the oxygen supply is reduced as in diminished vital capacity of the lungs or the oxygen consumption is increased as in hyperthyroidism, the additional insult to the already embarrassed respiratory system by the administration of an anesthetic may be fraught with grave consequences. Our study of cases on the surgical service of Dr. R. L. Payne at St. Vincent's Hospital has demonstrated that in hyperthyroidism with a rate of basal metabolism of plus 35% or below, nitrous-oxide-oxygen anesthesia may be safely employed; but in cases with a higher rate, ether must supplement the gas-oxygen or ether by the open method be used. Given a case with a basal metabolic rate above plus 50%, we consider the administration of any anesthetic a grave risk and operative measures are, if possible, postponed until the rate is reduced. For this purpose we employ rest in bed and radium. This latter has proven very satisfactory in ameliorating the symptoms and reducing the rate of basal metabolism.

Conclusion.

1. That a knowledge of the vital capacity of the lungs and the rate of basal metabolism is necessary to a proper selection of cases for general anesthesia.
2. That this kowledge is of value to the anesthetist and is a guide in the induction and maintenance of anesthesia.
3. That from the standpoint of the anesthetist a knowledge of the basal metabolic rate is of value in the selection of the opportune time for operative measures.
4. Operative cases selected from these studies permit the surgeon to proceed with the assurance that the patient is able to stand the administration of the anesthetic necessary for operative interference.

Discussion.

Dr. R. L. Payne, Norfolk: I am not as familiar with these details as I would like to be. The subject has been worked out by Dr. Whitehead and Miss Ide, anesthetist at St. Vincent's Hospital, over a considerable period of time and with great thoroughness on their part. The practical application of these principles has been of great value in selecting the proper cases and time for operative measures in thyroid disease. For ordinary operative work, there is required in nitrous-oxide oxygen anesthesia a mixture containing 89% gas. This leaves a 11% supply of oxygen, which is 3% in excess of the minimum oxygen requirement of the normal individual. Should there be a definite increase in the rate of metabolism with the consequent increased oxygen consumption, the minimum point of 8% would be raised and the excess oxygen supply of 3% reduced. In a case plus 50% basal metabolism the minimum oxygen requirement would be 12% which would allow a possibility of only 88% gas. In such case a small amount of ether would be necessary to obtain the proper relaxation. The advantage of these determinations is in the selection of the anesthetic to suit the individual case.

SPONDYLITIS DEFORMANS (MARIE-STRUMPELL TYPE.)*

By ALLEN F. VOSHELL, M. D., University, Va.

In my orthopedic work of the past several years a sufficient number of cases of Marie-Strumpell spondylitis deformans have been seen in the *late* stages of the deformity which were not diagnosed as such, that I feel justified in bringing this subject before you at this time, not as an original contribution or an attempt at a complete review of the literature, but to refresh your memories along this line in the hope that these cases may in the future be given much earlier treatment, thereby preventing the painful consequences and unfortunate outcome which has been so common in the past. The diagnoses usually accorded the majority of these patients have been sciatica, hip disease, indigestion and gastric crises, and appendicitis, some having had an appendectomy with a normal appendix and no relief following. The reason for these errors is easily explainable as soon as the causative factor of the pain is realized. I am sure that many of you, if not all, have records of young adults between twenty and thirty years of age who complained of pain in their backs, hips, abdomen or legs, and who upon examination showed vertebral ankylosis; or perhaps your case was much older but had begun the ankylosis at the above age and had become completely stiffened before being seen by you. It *is* then the ankylosis beginning at about twenty-three and finishing about thirty upon which I wish to dwell a little for the purpose of soliciting, first, your aid in helping to treat these patients much earlier than has been done, which therefore necessitates an earlier diagnosis, second your advice and co-operation as regards the etio-

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

logical factor on the one hand and the best method of improved treatment on the other. The treatment has hardly changed a bit in twenty-five years; the cause has never been worked out though many theories have been advanced.

There are various ankyloses which develop in the human body but I wish to limit my remarks to the one accredited by most authors to Marie and Strumpell, the ankylosis limited to the spine alone, not involving any of the other joints. I find in the literature some remarks by Bechterew describing a similar condition to the one mentioned differing only in its point of origin being in the cervical rather than the lumbar or dorsal regions. The end results are identical and my impression from the few articles read is that the conditions are one and the same, the point of origin not being sufficient evidence for separation. I therefore am including this latter under the same heading.

This type of deforming spondylitis without known etiology has been recognized for many years but no definite progress has been made with regard to cause or prevention, we do only "sit tight" and let it go its course, contenting ourselves in keeping down the secondary deformities. I hope to carry through some work along the lines of prevention, trusting that the etiology may be ferreted out afterwards. The gonococcus has been held responsible but without convincing proof, as has also the spirochaeta pallida. The deformity consists of a gradually but consistently progressing ankylosis between the vertebrae themselves, and between the dorsal vertebrae and ribs, in young adults of about twenty to thirty years of age (no other joints being involved except very infrequently the hips as a late complication) due to bony outgrowths or lips from each vertebra along its intervertebral ligaments until the fusion of these gives a complete stabilization of the spine, often called a "poker back," as though molten bone had been poured down their back. The posture carried by the patient during this progressive stage naturally determines the final position his spine assumes, so that *at present* the physician's advice is of service in this regard only.

The history and examination of this class of patients are about as would be expected when we know the result. The patient first complains of a slight stiffness in his back or neck which is relieved by bending forward a little, then an ache followed by pain begins to be noticeable and the patient bends forward more. The patient does not realize that he has flexed his spine until someone calls his attention to the stoop developed; then he tries to straighten up and carry himself better but is unable to do so due to the anterior vertebral ligaments and the pain of forced motion. There must be swelling and irritation of all the tissues closely associated with the vertebral column if the intense pain suffered by these patients is any indication. This inability to straighten up places the spine in a very poor position for the following fusion and should therefore first and foremost be prevented, particularly as the secondary pressure on the nerves by the bony projections which grow out causes more pain and its consequent increased flexion; some of these cases become bent nearly to a right angle at the waist and fuse there. Therefore, the actual amount of observable disfigurement is in direct proportion to the degree of flexion. As the above mentioned lipping progresses, its course is clearly demonstrable in the X-ray pictures, the nerve trunks become irritated and pinched causing severe pains to develop, *referred* however to the region or organs supplied by these trunks and their branches, usually bilateral. This stage of the disease is the time when a physician is consulted as these referred pains are definite and severe and cannot be passed off with a smile; they demand attention: these pains also seem sometimes to mislead the examiner and cause him to institute treatment for an entirely different condition followed by scant relief for the patient. Toward the middle of the course the patient begins to be limited in the extent of his respiratory excursions and this limitation progresses slowly until almost no thoracic respiration is performed, one-half inch being considerable for them, thus opening them to pulmonary complications, though rarely of a tuberculous nature. This ankylosis of the ribs at their costo-vertebral junction also plays a large part in the peculiar characteristic appearance of these cases, as well as limiting effective treatment for the correction of the deformity. When complete stability of both disease and spine has been reached all pain ceases, not to return, and the patient is left with a poker back, abdominal respiration entirely, and no *pain*. The diagnosis of these cases is quite simple, provided a *careful* his-

tory is taken, for it is the false impression gained from the patient's *recent* history that is usually misleading to the casual observer who then treats for appendicitis, gall bladder, or what not. One should always look back to the origin of the nerves involved in cases of pain before definite local treatment is instituted. The fault is in not crediting the spine as being a possible location for the origin of pain in nerve extremities.

There seems to be a certain type of individual which is more prone to develop Marie-Strumpell spondylitis than any other; that is the group of individuals who are thin, bony, never get fat, who have never been muscular, though they need not necessarily be chronic invalids or weaklings. So far as I have gone into the literature no case has been reported in the female sex, which should be of some significance, and cases arising in adults over thirty are unusual though not impossible. The posture assumed is variable in degree but of the same general trend; a C curve flexion of the spine as a whole including the cervical; a rigidity of the head by muscular spasm; and elevation of the shoulders with a tendency to forward protrusion and rotation, thus causing the scapulae to appear prominent or winged; and a certain amount of flexion of one or both hips which complicates the posture as a whole by tipping the body to one side. The shoulders give the impression that the thorax and head are rushing forward too fast for them to keep up. Hence, these people have a peculiar stoop which is almost typical. The gait is without the usual freedom and swing; it is stiff, all the spring being in the feet, and all turning is done as a unit, no rotation being possible in the spine itself; it is quite typical during the progressive stage, in fact almost diagnostic.

There is marked muscle spasm of the spinal groups of muscles, a moderate protuberant lower abdomen, almost complete limitation of motion in all directions in the spine with acute pain on attempted motion, pain on pressure over the intervertebral spaces both anterior and posterior, considerable psoas muscle contraction preventing full extension at the hips, inability to lie supine, except for a very short period, due to flexion throughout the body, almost complete obliteration of respiratory excursion. There are usually no demonstrable lesions in the other joints of the body except sometimes the hips though this complication is now generally conceded to be secondary and due to the prolonged muscular contraction of the psoas muscles. A peculiar feature is that the axis and atlas are rarely involved, or if so only very late in the course, becoming ankylosed as the very last step. The lumbar spine is the most frequent location by far for the primary lesion, then the dorsal and cervical in order, although statistics do differ considerably on this point. No superficial signs of irritation or inflammation are ever discernible. The patient's general condition suffers markedly, due principally to the constant presence of pain during the day, and more pain at night, especially if he sleeps upon the usual very springy bed with a hole in the middle. Hence, loss of appetite, loss of weight, loss of sleep are very important secondary complications, as is also the markedly decreased respiratory excursion, even being as small as one-fourth of an inch.

The X-ray pictures show a gradual progressive growth from the bodies of the vertebrae along the intervertebral ligaments with a complete fusion as the end stage; no areas of destruction have been observed.

The laboratory tests are usually negative throughout.

The treatment heretofore instituted has been to inform the patient as to his future outlook, a stiff spine forever after five years of discomfort. We then essay to stretch and straighten the individual very gradually as to spine and hips until he has returned to as *near* normal as possible, and to hold him thus by braces or other apparatus until the spine has become solidly ankylosed and the progression has ceased. This whole course lasts from two to six years or thereabouts. The one most gratifying point in this method, and will have to be in all methods, is that the patient gets relief from pain almost immediately the above system has begun, his appetite and strength begin to return, and he begins to sleep again and feel rested.

It is the early stage, however, which should interest us particularly, not only as to the differential diagnosis from the general arthritic and disease conditions, which require specialized technique and practise, but as to the prevention of the ankylosis and the relief from symptoms. If we can not find the cause of this disease or deformity (it may be both

who knows?) we can perhaps help the poor unfortunate who has developed this misery and prevent the apparently unpreventable stiffness, and then find the cause later;—put the cart before the horse, so to speak. It is in regard to this procedure that we hope with the help of our masseur, Dr. Moritz, to make some progress in the near future. We have two cases now under treatment, one of whom is only partially ankylosed.

I close, then, with this plea, that all will remember this type of deformity and its consequences when a case of obscure pain temporarily baffles you, will carefully examine the spine itself as well as X-ray plates of as many vertebrae as necessity indicates, and will help us to clarify this problem in the near future. We are trying and I think I may say we are progressing, so that the future *does* hold out hope as it never has before for these cases.

University Hospital.

REFERENCES.

Modinos. Paris Medicin, May 28, 1921.
Bechterew. Neurologie Centralblat, 426.
Marie. Review de medicin. 1898, 18.
Senator. Berlin klinische Wochenschrift, November 20, 1897.

SOME COMMENTS ON THE SUBJECT OF VERTIGO.*

By JOHN DUNN, M. D., Richmond, Va.

Whenever the subject of vertigo and nystagmus and the interpretation of the vestibular nerve tests comes up for discussion, Barany's masterly work must persistently appear first to our minds. I always felt, however, that both he and his immediate successors had left something unfinished so far as the completion of the practical application of their discoveries was concerned. This feeling was not present when irritation or destruction of the vestibular terminals by inflammatory processes was under consideration. It was when the interpretation of disturbances of the intracranial pathways of the vestibular nerves came into question that this feeling arose. With the persual of Dr. I. N. Jones' work on "Equilibrium and Vertigo," it, to a great extent, disappeared and it was at once evident that the hitherto poorly explored paths of the vestibular nerves had for practical purposes been mapped out as they had not previously been done. Dr. Jones' book is delightful; it is full of riches for those of us whose ideas on some of its subject matter, if they existed at all, were, to say the least, hazy. As I read and digested its pages, I thought otological writings would from then on contain many comments on its claims and that my confreres would everywhere bring its teachings into daily use.

Such seemingly has not proven to be the case. Since 1918, nearly all of the few articles I have seen from the pens of our American otologists have concerned themselves directly with statistics dealing with the results of the turning or caloric tests in cases of apparently normal individuals. Rarely does one find a serious effort to explain the deviations from the normal which must have occurred time and again in the many cases upon which their statistics are based. If we except Wilson's paper on "Labyrinthine Tonus," I know of no article on the subject of the vestibular nerve written by an American otologist since the appearance of "Equilibrium and Vertigo" which concerns itself with the deeper problems of the extremely important new lessons so carefully thought out and illustrated in Dr. Jones' book. Judging from this silence, we might superficially infer that our American confreres have accepted in toto Dr. Jones' explanations and conclusions as final and the incident of the vestibular problem, save for minor anatomical details, as closed. It is certainly difficult not to recognize the master hand in Dr. Jones' treatment of the intracranial disturbances of the vestibular pathways. No such clear conception exists in the European otological world if I may judge from the articles which have appeared in our special journals; or, if it exist, those who possess it seem to lack the power of the clear presentation which marks Dr. Jones' book.

What I have just said often comes to my mind when the subject of vertigo and nystagmus presents itself, and it is mainly because so few of my immediate confreres seem willing to discuss with any enthusiasm the details of this important chapter in our special field. I have wondered why this is so. It is not from any inability on their part to understand the vestibular reactions to the modern tests. It is not from any unwillingness on their part to give the time necessary for the making of these tests, nor is it from any lack of appreciation of their value. There seem to me to be three main reasons why this subject is not as generally provocative of discussion as tonsil-

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology at its meeting in Roanoke, April, 1922.

lectomy or corneal ulcer. First, the relatively few cases in the daily practice of most of our aurists which seemingly call for the application of these tests. Secondly, the difficulty of obtaining from the text books a clear working mental picture of the physiology of vestibular disturbance, and, thirdly, the fact of the necessity to be so well grounded in brain anatomy and physiology that one can distinctly visualize the intracranial pathways of the vestibular nerves, and their exact relations to the adjoining cerebral or cerebellar structures. Without this last knowledge, attempts to interpret the results of the vestibular testings in brain cases are well nigh worthless. This thirdly contains the necessity of knowledge of the pathological conditions to be found along the course of the vestibular nerves and their destructive as well as their pressure effects upon the portions of the vestibular tracts which they affect. Here also must be included the fact that to only a few otologists is the opportunity afforded of examining a sufficient number of brain cases for them to be able to give to the variations in the vestibular responses their proper values.

Experience has taught most of us to refer in a general way aural vertigo to its source and in the same general way we have an idea what we are to expect from remedial agents plus the vis medicatrix naturae—and with this most of us have been satisfied, just as we are satisfied with the treatment of, say, the common acute forms of head colds. In the majority of these latter cases we follow a well known routine, which experience has taught us will in a short time be followed by the disappearance of the annoying nasal symptoms. We do not in every such case examine microscopically a smear from the nasal secretion, or look into the exact condition of the nose and throat, and of the kidneys and of the digestive tract. These latter examinations are only exceptionally done before we prescribe in cases of head colds and, then, after our routine treatment has failed to produce rapidly the expected cure. With vertigo the case is very different. In head colds the diseased area is visible to our inspection, if we choose to look. In vestibular disturbance the area affected is invisible. In head colds we can see the effects which follow our treatment; in vestibular diseases we measure the effects of our treatment by our patient's say so—and unless we test out the reactions of the vestibular nerves we remain in ignorance as to whether that which caused the vertigo has or has not left the vestibular nerve functioning. For example: Mrs. I., aged 40, in the course of mumps became suddenly and permanently deaf in one ear. She had a slight vertigo. Examination with the coloric test the next day revealed perfectly functioning semi-circular canals in the deaf ear.

A., aged 14, with perfect hearing in both ears, became suddenly deaf in the left ear during the course of mumps. He, too, suffered from transient vertigo. Mrs. I., became suddenly deaf from mumps, had transient vertigo and examination revealed uninjured semi-circular canals. Master A. gave the same history. Superficially we might claim the right to say that Master A.'s semi-circular canals were also uninjured—but what were the facts? Examination of his vestibular reactions showed that in the left ear which was stone-deaf there was absolutely no response whatever from any of the three semi-circular canals, while in the right ear, whose hearing was normal, only the horizontal or vertical canals, I forget now which, responded. These cases are instructive. They seem to show that in mumps the active poison may affect either the cochlear nerves alone, or one or more of the vestibular branches alone, or both the cochlear and all of the vestibular branches.

But these comments are by the way and merely illustrate the point I wish to make, viz.: All cases of vertigo deserve to have a careful examination of the functions of the vestibular nerves and it is only when we know the condition of the several divisions of these nerves and have adjusted them into their proper place in the clinical picture are we able to appreciate the true condition of our patient.

All cases of syphilis should be submitted to tests of the functions of the vestibular nerves, if one cares to have all of the information it is possible to obtain in regard to the condition of the intracranial structures. I have had no experience in the primary or secondary stages, but with cases of congenital and tertiary syphilis, the prolonged delay in the responses to the caloric tests, the at times correct but feeble nystagmus, the slight vertigo and nausea and with them the slight, now and then absent, past pointing, sometimes tell of a basal condition unsuspected. Two cases will serve as illustration.

Mary L., aged 12, syphilitic by heredity, shows severe interstitial keratitis, atrophic catarrh, Hutchinson's teeth, etc. The vestibular responses are normal. Ellen K., aged 10, shows also interstitial keratitis, Hutchinson's teeth, etc. The vestibular tests, however, show markedly delayed responses; apparent absence of all rotary nystagmus; horizontal nystagmus present; absence of all vertigo, nausea, past pointing and falling. We cannot infer in regard to the degree of activity of the vestibular responses. We must test them. Whenever possible, in all cases of central paralysis or paresis of one or more of the cranial nerves, whether occurring acutely or slowly, the functions of the vestibular nerves should be examined. The following two cases will show the importance of this statement.

Mr. X., aged 58, had a short attack of unconsciousness while at dinner. He was sent to me because, on recovery, he was hoarse. Laryngoscopic examination revealed a complete paralysis of the left recurrent laryngeal nerve. There had been previous slight attacks of vertigo and tumor was suspected. Examination of the vestibular nerves showed marked bilateral lessening of the responses. The Wassermann test was strongly positive.

Again Mr. L., aged 64, was sent to me for vertigo of a year's standing. His description of his "vertigo" soon showed that it was not of vestibular, but of ocular origin. Paralysis of the left inferior rectus was found to be present. Formerly, owing to the age of the patient, one would have been satisfied with this, having attributed the paralysis to vascular disturbance in the nuclear region of the third nerve, and this too, in the face of the fact that no marked cardio-vascular nephritic disturbance could be found. Examination of the vestibular nerves showed marked delay in responses to the caloric tests. When the responses finally came the eyes showed a very feeble nystagmus—but correct as far as the paralysis of the inferior rectus would permit. Vertigo was almost entirely absent and no past pointing could be demonstrated. Further examination revealed absence of the patellar reflexes. The patient had already for a considerable length of time been on specific remedies. In both of the above cases the hearing was normal and in neither case was tinnitus present. I do not understand the exact pathology of these vestibular disturbances. The auditory fibres escape injury that can be measured. Why the vestibular elements are affected and where will some day be discovered. The absence or near-absence of past pointing suggests that possibly we are dealing with a disturbance in the mid-brain at the point where the proprioceptive impulses from the cervical muscles met the impulses from the vestibular terminals and that the lesion is similar in character to that which in locomotor ataxia abolishes the patellar reflex and in the ciliary ganglion gives rise to the Argyll-Robertson pupil. This, however, is mere conjecture, and probably an incorrect one.

It is only by making examination of all of our cases of vertigo that we are able to appreciate the great variations in the intensity of the responses in active healthy vestibular systems. In some persons the responses to the caloric test are, we may say, almost violent, so prolonged is the nausea nad vertigo, and it is not always easy to persuade the patient to submit to repetition of the test; in others the responses are hardly more than unpleasant, unless the tests are prolonged unnecessarily. It is interesting, too to observe how in one case vertigo is more complained of than nausea, while in another the responses on the part of the pneumogastric are much the most unpleasant. I have in mind two cases, both women, both for a considerable time past have been subject to repeated attacks of vertigo of a more or less mild type.

In both cases the form of vertigo superficially suggests that it is a transient vascular disturbance of the whole vestibular terminal system. Both cases react violently in response to the caloric tests. In the one case the response is mild nausea, but severe and prolonged vertigo; in the other, severe and prolonged nausea but mild vertigo. In neither case are there any symptoms to justify the diagnosis that there is present any inflammatory condition of the inner ear or any intracranial disease. A noteworth feature, too, is the increase of the vertigo when these patients find themselves in crowds. Correction of refraction errors in both cases lessened the disturbances. Naturally, one suspects an hysterical or neurasthenic element. In both cases there are present abdominal disturbances. Enough has been said to illustrate my first point, viz: That the application of the vestibular tests in each case of vertigo, as it presents itself, will bring forth many interesting

and unrecorded facts and is well worth the time the tests take.

In regard to the difficulty of obtaining from the text books a clear mental picture of the disturbance worked in the various semi-circular canals as the result of the application of the various tests I have especial reference to my own experience. When the results of Barany's work were first brought to my attention and the elaborate diagrams (see Ballenger's Diseases of Ear, for example) of the semi-circular canals with the arrows pointing in every direction to show the flow and change of flow of the endolymph as the tests were varied, I found it no easy matter to clearly associate the lessons these diagrams sought to teach with the varying nystagmic movements and the past pointing of the extremities and falling of the body. Indeed, I may say, I failed to do so, because it was a matter of memory unaided by knowledge of the basic relationship of the movements of the endolymph, of the eyes and of the body and extremity movements. To be told that the nystagmus, the past pointing and the body falling always take place, under normal conditions, in the direction of the endolymph flow and that the vertigo is in the opposite direction, while true, required an effort of memory pretty much like that of remembering the dates in history or the birthdays of the members of one's family or friends. To my mental walls such dates will not adhere. There is too much of the "hay foot!" "straw foot!" in the make-up. One day, while I was submitting to the Barany test of the transverse vertical canals, on attempting to stand, I felt a distinct pull of the tendons of my ankle joint, then of my knee, then hip, body, shoulder and neck. These motions were so distinct that in spite of the vertigo and efforts to balance myself, which I was experiencing they made a distinct impression on my mind. As soon as the vestibular disturbance had cleared up, I stood with my feet together and bent my head toward one side and I immediately recognized that I was calling forth in my ankle, knee, hip, body, shoulder and neck the exact movements which the turning in the Barany chair had produced.

It was now clear to my mind that every time I dropped my head toward either shoulder two things took place, the endolymph in the transverse vertical canals was thrown to the opposite direction and that every joint in my body and extremities on both sides participated in the movement, on one side relaxation, on the other fixation. It then became an easy matter to visualize the movements of the endolymph of the transverse vertical canals with the body and extremity falling and past pointing, as they are so-called. It followed as a matter of course, to see what took place when the head was bent forward and backward or revolved in the horizontal plane. Thus the movements of the endolymph in each of the three canals were seen in their relationship with their body and extremity movements.

But why the nystagmic movements of the eyes? What connection have they with the movements of the endolymph fluid and past pointing and falling? Why this association? If you will hold a mirror before your face and while looking into it turn your head from side to side, you will see that the eyes move in a direction opposite and with a rapidity equal to the movement of the head. The eyes maintain their parallelism but their movements from side to side have an evenness, a lack of jerkiness, which is altogether absent when the head is fixed and the eyes are voluntarily turned from side to side. The former movements of the eyes resemble those of a pendulum in their evenness. In this experiment the willed control of the eye muscles is entirely suppressed. It will be further noted that the pendulum movements of the eyeballs are rotary if the head is dropped to either shoulder, are in the horizontal plane if the head is revolved from side to side, and are in the anterior-posterior plane if the head be moved forward or backward. In other words, the pendulum movements are always in the direction of the movement of the endolymph. Having made this observation in regard to the ocular movements and having thus linked them up with the movement of the endolymph and the body and extremity movements and having then seen the intimate, necessary connection among them, all difficulties of visualization of the vestibular complex disturbance disappeared. In the three elements of the vestibular trinity, their relations the one with the others being clear, there arose at once the effort to obtain an equally clear conception of the nervous pathways concerned in the production of the vestibular pictures. To describe these pathways and their connections is out of place here. It is enough to say that contemplation of them brings out some inter-

esting and important facts,—among them, one of the reasons for the autonomic nerve supply to the external ocular muscles; another, the existence in the mid-brain of community centres for the reception of impulses from both the vestibular nerve terminals and the sensory nerves of the neck muscles, i. e., of two-way switches, so to speak, capable of transmitting cerebralwards impulses from both the vestibular terminals and the neck muscles, thus furnishing the brain with a double source of information as to the exact position of the head at all times. To discuss this point fully would lead us to consideration of both the functions of the cerebellum and the value of postural tone,—manifestly, subjects beyond the scope of this paper. I have ventured at the risk of boring you to give these details of how I acquired what practical knowledge I possess of the inter-relationship of the elements of the vestibular reactions. I have done so because I had so much trouble and it took me so long to master a clear, practical working knowledge of the vestibular problem.

The last phase of my paper has to do with the vestibular responses as an aid to the diagnosis of intracranial disturbances. I might say, read Dr. Jones' work, and close my paper right here; but merely reading Dr. Jones' book will not suffice. Its flat diagrams, however excellent they may be, are merely suggestive helps. They in no way draw for us actual pictures. For those of us who cannot visualize distinctly the intracranial pathways of the vestibular nerve, efforts to make use of the valuable information this book contains will prove for practical purposes futile. The more clearly the mind's eye can see these pathways and their relationship, at each point, to their adjacent structures, the more valuable becomes our knowledge. I daresay there are few of us who keep in our offices a hardened human brain and with it in our hand, attempt to see what must be the intracranial conditions which could give rise to the varying vestibular pictures our tests disclose. Until we have done this many times, until the great mid-brain cerebellar region is clear to our mind's eye, until our mental perspective can give proper correlation in size and position to the cerebellum, its peduncles, the medulla and pons and to their nuclei and tracts, we shall remain unable to interpret aright the results of our vestibular tests. To this we must add knowledge of the special tumors and the inflammatory affections which occur in the cerebello-mid-brain region, and of the physiology of the many nervous centers which are here crowded together. When our preparation is complete, the full value of Dr. Jones' work will be evident,—not only evident, but with it, as we test our cases, will come that ever-recurring mental exhilaration which is the reward of the keen exercise of our observing and reasoning powers.

One by one the secrets of the ear have been unfolded and have dropped their mysterious petals until now, in most cases, the diagnosis, line of treatment to be adopted, and prognosis are so plain that they bear the label of routine.

It may be objected, however, that the intracranial problems of the vestibular nerve belong to the brain specialist, especially to the surgeon. This may be true so far as treatment is concerned but the interpretation of the vestibular picture must always belong to the otologist, but not to him who confines his literary researches solely to text books in otology. There are many terminal vestibular pictures whose proper interpretation are possible only by those to whom otological problems are constantly presenting themselves, and the otollogist alone will be able to give to them their true value in the picture presented in the presence of intracranial troubles which involve the vestibular pathways.

411 *East Franklin Street.*

ETIOLOGY, DIAGNOSIS AND TREATMENT OF CHRONIC GASTRIC AND DUODENAL ULCER.*

By P. S. SMITH, M. D., Abingdon, Va.

Paradoxical as it may appear, the stomach, figuratively speaking and in the language of laymen, is the "chief end of man." Napoleon, evidently a physiologist as well as warrior, stated that his army travelled on its stomach. It would not be far amiss to say that the success or failure of the South in 1861-65 depended in a large measure upon her quartermasters and food supply depots. Ample, suitable food and the ability to utilize it satisfactorily in the gastro-intestinal tract are the *sine qua non* of health and happiness of the individual or nation. But the subject assigned for this paper as a part of the sym-

*Read as part of the Symposium on Chronic Gastric and Duodenal Ulcer, at the meeting of the Southwestern Virginia Medical Society, Wytheville, September 13 and 14, 1922.

posium is entirely too large to spend further time with matters more or less irrelevant.

The simplest method of accomplishing this task is the conventional way, that is, by frequent references to the literature and authorities on the subject, to discuss seriatim the cause, diagnosis and treatment of chronic peptic ulcer. Another plan, however, less stereotyped in character, offers a more attractive and practical method of approach. Few patients consult us for treatment only; while the majority come complaining of a symptom, asking what is the cause of their ailment and what must be done to obtain relief. Right here is the fault inherent in much of the instruction given in many medical schools. In the absence of any original data to contribute, an effort will be made, therefore, to treat the subject from the standpoint of the problems raised in the mind of the internist when a patient, who is subsequently found to have a peptic ulcer, presents himself for advice.

The files of almost any general hospital will show numerous case records of peptic ulcer as characteristic as the following one selected at random from our summary of chronic duodenal ulcers. Only the salient facts in the case are recorded here for the sake of brevity:—

Case No. 4895, C. P., age 20, single, male, complains of upper abdominal pain off and on for the past 4½ years. It began rather suddenly. While engaged in plowing a field a stump of a tree flew up striking him violently in the pit of his stomach. He resumed work for two hours when he was forced to stop on account of pain at the site of the injury. No evidence of peritonitis, but was unable to work for a couple of days thereafter. Following this for 3 years he had periodic pain, though he was never able to work more than 30 days consecutively. During the past 1½ years the pain has been practically a daily affair. It is described as a "deep-seated hurting," at times burning in character, largely limited to the epigastrium but at times radiating through to the back. Vomiting usually relieves him, food of a simple character stops the pain promptly for an hour or two; cooking soda has been more helpful than anything tried. He is constantly hungry even though in pain. For six months he has passed small quantities of black "tarry" material from his bowel, but has never vomited blood. Has lost 30 lbs.

Examination: Teeth neglected and there is pyorrhoea; tonsils definitely infected. Abdomen shows no distention, slight diffuse spasticity, deep tenderness over the right epigastrium with slight muscle spasm.

No peristaltic waves or palpable masses.

Blood: hgbn. 85%: W. B. C. 12,200; P. 66%.

Urine: Neg.

Fractional gastric analysis gives a high per cent of free hydrochloric acid in the fasting stomach and following the Ewald meal.

Stools: No occult blood.

Gastro-intestinal X-ray study shows a constant filling defect in the first portion of the duodenum.

Operation reveals a large, chronic ulcer, with much scar tissue, induration and organized adhesions just outside the pylorus.

This case is presented not only because of its classical features, but because it introduces an interesting factor concerning the etiology of peptic ulcers. How much importance can be attached to the history of trauma here? Review of the literature reveals an astonishing divergence of opinion entertained by students of the subject. Frankly, the cause of peptic ulcer is not definitely known. Where many drugs are advised therapeutically in a given disorder, treatment is generally unsatisfactory. Where numerous, even though plausible, theories are advanced to explain the etiology of a recognized disease there is still need of further effort on the part of the research worker. Osler, in discussing the subject, mentions local trauma, lowered alkalinity of the blood, gastric hyperacidity, decreased resistance of the tissues involved from intercurrent diseases like tuberculosis, syphilis, scurvy, diabetes, etc. Virchow, at an early date suggested embolus and thrombus as pathogenic factors; neurologists lean to a lesion of the central or peripheral nervous system; endocrinologists inject their 'hormone" theory; Rosenow finds a field here to prove the tropism of bacteria; while others less scientific in their attitude talk of hot bread, condiments, etc.

Sippy, after reviewing the subject exhaustively, utilizes a proven point here and another there, and reaches a conclusion that for the present, at least, must be accepted until its fallacy is demonstrated. Logically stated, he asserts that there must be a predisposing cause resulting in localized malnutrition or

necrosis of the mucosa; given this, there must follow a secondary factor directly causing ulceration and retarding healing. Rosenow's bacterial exposition, added to Virchow's theory of embolus and thrombus formation, fulfils the first requirement; the digestive action of the gastric juice and the irritating effect of uncombined hydrochloric acid on a raw, exposed mucosa answer the question often asked why peptic ulcers do not as frequently heal spontaneously as those located elsewhere.

May not the "kick" of the offending tree stump have resulted in a temporarily lowered resistance of our patient's duodenum to the focal infection in his mouth and tonsils? If so, it is easy to follow Sippy in arguing for a bacterial embolus involving the duodenal mucosa with subsequent localized malnutrition, necrosis and ulceration in the order stated; next, nature's effort to repair the damage prevented by the corrosive action of the digestive enzymes and free hydrochloric acid. At least, it offers a picture that appeals to the imagination of the theorist and likewise commands the respect of the scientist.

The data offered in the case history given, together with the following, will suffice to bring out the cardinal diagnostic points in chronic peptic ulcer:

Case No. 6361, Mrs. C. L. B., age 45, complains of indigestion and bleeding from the stomach. For 14 years has had stomach trouble characterized by a dull, aching pain in the pit of her stomach, later of the "gnawing or hunger" type, periodic in time, at times radiating through to her back; relieved by food for 2 to 3 hours, also by soda which she takes during the night. One week ago she vomited a large quantity of "coffee-ground" material which contained blood and later passed a number of "tarry" stools.

Examination: Well nourished, but anemic in appearance. Teeth badly neglected and pus can be expressed from the gums.

Abdomen not distended, tender nor rigid, though the right rectus is slightly more spastic than the left. No masses or peristaltic waves.

Blood: hgbn. 62%; W. B. C. 12,000; P. 76%.

Stools: No occult blood.

X-ray with barium meal shows constant filling defect, or incisura, on greater curvature, prepyloric, suggesting ulcer opposite to incisura. No evidence of malignancy.

Operation: Small, indurated ulcer, gastric side of pylorus with many adhesions but no apparent stenosis.

Post-mortem statistics indicate that open or healed peptic ulcer is present in five per cent. of all adults dying from various causes. Mayo believes that this figure is too high. At any rate, its incidence is sufficiently great to demand a careful scrutiny of the patient's symptoms if we are to avoid overlooking a lesion that has fatal potentialities. Such terms as gastralgia, gastritis, nervous indigestion, hyperchlorhydria, etc., are often ill-advised. In this connection it should be stated that few clinical entities require the same degree of painstaking care in eliciting and analyzing the patient's history and symptoms, in orderly sequence, that is necessary in peptic ulcer. The stomach may endure tremendous abuse; infection of that organ and duodenum is not frequent. Hence, if by study of a given patient we can exclude extra-gastroduodenal lesions, chronic pain or distress in the epigastrium should always suggest ulcer or malignancy. On the other hand, laymen have become so familiar with the significance of peptic ulcer, and what it entails therapeutically, that a real responsibility rests upon the physician not to indict a patient on such a charge without due evidence necessary to convict. In some clinics the diagnosis is altogether too popular.

What then warrants us in making a diagnosis of chronic peptic ulcer? The two cases referred to illustrate the cardinal symptoms without which an opinion should be reserved until further investigation can remove the doubt. In both, the victim's history was practically conclusive and far outweighs the most expert physical examination. In the absence of those almost infallible guideposts,—a history of vomiting of blood and passage of "tarry" stools by a patient who is known not to have cirrhosis of the liver, malignancy, splenic or pernicious anemia,—we must elicit from the patient, without too much prompting, at least two out of three of the classical symptoms resulting from chronic ulcer. Briefly stated, they are as follows: 1. Periodic distress or pain largely localized in the epigastrium; 2. Protein food relief occurring immediately after eating and lasting from one to three hours; 3. Prompt relief of distress on taking an adequate dose of soda bicarbonate or calcined magnesia.

It must be admitted that chronic cholecys-

titis or appendicitis with their referred pain, associated with hyperchlorhydria and pylorospasm, may at times simulate so closely the above syndrome as to result in an erroneous opinion. Medicine, however, would lose much of its fascination if it could be reduced to a mathematical basis. Pity the chiropractor, while condemning him, in being limited to a single diagnosis, viz., mal-adjusted vertebrae. With him there is no possibility of error, though recently we admitted a college professor suffering from an acute perforated duodenal ulcer who had received "spinal adjustments" at the hands of one such subsequent to the perforation!

It would be most unfortunate if the writer were understood to imply that the diagnosis of peptic ulcer could invariably be made in the simple fashion suggested. Some cases remain obscure after they have passed through the entire "mill" of diagnostic investigation. Particularly should one be wary in advocating operation with such limited data. The questionnaire of the examiner should include any corroborative facts that may suggest themselves. The examination that follows must be thorough, noting any foci of infection, localized (finger-point) tenderness in the epigastrium, peristaltic waves from left to right, or the presence of a palpable mass in the region of the pylorus. If available, recourse should be made to the laboratory for occult blood examination of stools, a fractional gastric analysis for evidence of stasis, old blood, hypersecretion when the stomach is empty of food, and a free hydrochloric acid concentration above 40 or showing a tendency to rise after the three hour period following the Ewald meal. Finally, the modern radiologist can furnish helpful confirmatory data by a gastrointestinal study of the barium meal. Since all of these aids in diagnosis are not available to the average physician in many cases, he must cultivate all the more assiduously the habit of painstaking investigation of these patients as far as his facilities will permit. When the distress picture is subjected to careful analysis it is believed that most of them can be accurately diagnosed without the help of the laboratory or roentgenologist.

Ulcer symptoms, unfortunately, are at times simulated by carcinoma and syphilis of the stomach; malignancy, especially, should be thought of in every case in which a diagnosis of ulcer is made. If it can be demonstrated that the lesion is on the duodenal side of the pylorus, cancer is highly improbable. On the other hand, if there is an absence of free hydrochloric acid, and lactic acid is found, cancer must be excluded. A palpable mass, associated with the foregoing findings, is strong presumptive evidence of carcinoma. A careful search for metastases should be made and the aid of the roentgenologist requested. the blood Wassermann reaction will answer the question regarding syphilis.

The third and last case history, with the two already introduced, will serve to emphasize what need be said as to the treatment of chronic peptic ulcer:

Case No. 6130, I. G. M., age 40, male, complains of stomach trouble, stating that for 12 years he has had periodic pain of a "gnawing" or "aching" character in the pit of his stomach. Appetite is "too good"; food relieves for 2 to 3 hours; no pain upon awaking in the morning; has taken a "barrel of soda" with temporary relief; vomiting also helps him; no blood in vomitus but has passed black stools Examination shows no anemia and is essentially negative except for demonstrable dental infection and moderate tenderness over the right epigastrium with slight muscle spasm. Blood, stools and urine negative. Gastric analysis: 60 c.c. in fasting stomach and a sharp rise of free HCl during period of digestion of Ewald meal.

X-ray shows a constant filling defect of the duodenal cap. This patient was instructed regarding his diet and given alkalies; several months later he reported himself free from symptoms.

Most of the recognized diseases we see are definitely classified therapeutically as either medical or surgical. Some types of pleural empyema, toxic goitre and specific pelvic infection, for instance, may be medical today and surgical tomorrow. Chronic peptic ulcer belongs to the latter group of clinical entities. Only the inexperienced surgeon advocates operation for an uncomplicated ulcer of less than one year's duration. Furthermore, Moynihan, whose surgical judgment is universally recognized, in a paper on chronic gastric ulcer, states: "It is at least arguable that the necessity for surgical relief in many cases is due to a too perfunctory trial of medical treatment," and he advises that "a really serious attempt to treat all cases of chronic gastric

ulcer medically should be made before surgical treatment is instituted." The *routine* gastro-enterostomy has fallen into deserved disrepute, for, with a patent pylorus, food and gastric secretion continue to pass through the normal opening and the emptying time of the stomach in such cases is not hastened. And yet, no one questions the fact that a perforation, marked induration and tissue-narrowing of the pylorus, perigastric abscess, or an ulcer with beginning malignant degeneration demand surgical intervention. Nor is the removal of a demonstrable focus of infection, which is essential to proper treatment, ordinarily a matter for medical attention.

A diagnosis of peptic ulcer having been made, it is the business of the internist to determine, if possible, the location, chronicity, extent of the ulcer and the absence or presence of complications such as have been mentioned before advising treatment. What can be said of the medical care of chronic peptic ulcer? Sippy claims to relieve permanently 85% of his cases of ulcer with retention of food and secretion, demonstrating that the obstruction thus overcome results from pylorospasm or acute inflammatory swelling. The remaining 15% show tissue-narrowing and a cicatrix of the pyloric outlet and, therefore, are manifestly surgical. Such cases as require surgery should be given the benefit of medical and dietary care after operation.

The rationale of all medical treatment is based on the acceptance of the etiological factors previously stated. The digestive action of pepsin is due to its solvent or proteolytic effect on protein substances only when properly permeated with free acid. The exposed ulcer bed is a fertile field for such digestive action of the enzyme. Hence, only by maintaining accurate neutralization of all free hydrochloric acid during the time food and its accompanying secretion are in the stomach may the solvent action of the gastric juice be prevented and the conditions necessary for healing of the ulcer attained. Clinical relief and post-mortem examinations of treated patients dying from other causes testify to the practicability of the treatment.

Among the many workers in this field Smithies and Sippy stand out prominently. Time will not permit of a detailed discussion of the therapeutic procedures advocated by them. Briefly, Sippy's plan consists in putting the patient to bed for two or three weeks and controlling the free acidity and corrosive gastric juice by feeding him a combination of milk and cream every hour from 7 A. M. to 7 P. M. for one or two days. Later, a soft egg with cracker or bread and butter may be given once daily. As the symptoms improve the diet is gradually enlarged and varied so as to include two or three eggs, cereals, cream soups, vegetable purees, jellies, custard and other soft, digestible articles. On such a diet charts usually show a progressive increase in the patient's weight. Food alone will not maintain control of the free acidity; hence, alkalies are administered. Powders containing calcined magnesia and sodium bicarbonate alternating with others of calcium carbonate and sodium bicarbonate are given midway between feedings. Following the 7 P. M. nourishment the powders should be continued every half-hour for four or five doses, or until the stomach contains no food as determined by the stomach tube. Later, the acidity and secretion may be controlled by continuing the alkalies and spacing the feedings every two, three or four hours. The amount at each feeding should not be large, but both quantity and variety may be increased from time to time as circumstances justify. A trial, full meal may be allowed occasionally. Usually, the pain is relieved in one or two days after treatment is begun. If there is much flatulence, the carbonates are reduced and the magnesia increased; frequent stools or irritation of the colon are combated by reversing the formula. In the average case treatment should be continued for a year; some require a longer period.

Peptic ulcer with retention and stagnation of food and secretion, when not resulting from cicatrization of the pyloric outlet, is handled in much the same manner. Larger doses of alkalies and smaller feedings at first are necessary. The stomach should be washed out one-half hour after the last powder is taken; in those with a large night secretion a second lavage at midnight may be needed for a time. The patient can soon learn to do this for himself. If at any time the amount of the secretion is not large and there is little or no free acidity in such night washings, one may feel assured that the ulcer is not being subjected to the corrosive action of the gastric juice day or night; under such circumstances healing is inevitable. The author of the treat-

ment states that the co-operation of the patient is easy to secure since the relief so promptly felt by the victim from the outset more than justifies the necessary trouble and inconvenience.

It is not the writer's purpose to invite a discussion of the relative merits of surgical and medical treatment. Conditions in any given case will often solve the problem of what disposition shall be made of the patient. He may not be operable on account of complications. On the other hand, the vocation, poverty or lack of intelligence of the patient may be such as to render the medical treatment not feasible. In few conditions is there need of closer team-work on the part of the surgeon and internist; the one is the complement of the other; a spirit of mutual concessions is essential. The writer's medical life has been largely spent in a surgical "atmosphere," the energizing and life-saving properties of which no one is more appreciative. A broad view-point, unfettered by prejudices, not distorted by mental "astigmatism," and with the best interests of the patient as the determining consideration, will solve each problem as it arises.

Conclusions.

1. Peptic ulcer is a fairly common disease.
2. There is reason for the belief that many ulcers of the stomach and duodenum exist, and later heal spontaneously, without causing sufficient symptoms to command attention.
3. The cause of peptic ulcer is not definitely known. Bacterial emboli plus the corrosive action of pepsin and free hydrochloric acid are probably responsible for most cases.
4. Chronic pain or distress in the epigastrium should prompt the examiner's suspicion of ulcer or malignancy.
5. A careful history, systematically recorded, is essential to a correct diagnosis. The laboratory and X-ray should be utilized when possible.
6. Ulcer of the duodenum is more common than gastric ulcer; cancer involves the stomach primarily more frequently that the duodenum.
7. Many cases of ulcer thought to be surgical can be cured medically. All foci of infection should be removed. Patients requiring operation should later receive medical and dietary care.

George Ben Johnston Memorial Hospital.

SURGICAL TREATMENT OF CHRONIC GASTRIC AND DUODENAL ULCER.*

By ALFRED P. JONES, M. D., Roanoke, Va.

One of the most able men I have ever known used to say that every man working in any specialized branch of medical science ought to do most of his reading outside of his own specialty. The discussion of the treatment of gastric and duodenal ulcer certainly bears out the wisdom of that statement, because both surgeons and internists can learn much from each other as to the efficient management of this disease, and the best results can only be obtained by the close association and hearty co-operation of both.

Today it is not a question of medicine versus surgery but medicine with surgery in the treatment of this disease.

From the surgical standpoint we must recognize three types of ulcer:

1. The perforating ulcer.
2. The acute or early ulcer.
3. The chronic or indurated ulcer, with or without pyloric obstruction.

It is now universally recognized that the only rational treatment for perforating ulcer is immediate surgical intervention. In order to make this possible, prompt recognition of the condition is necessary. The points in diagnosis are—the sudden onset of acute abdominal pain, following a history of chronic ulcer, and the evidence of an acute peritonitis.

Moynihan has well brought out the diagnostic significance of board-like rigidity of the abdominal muscles as distinguishing this condition from gall-stone or renal colic. With smooth muscle colic your patient is restless, twisting and squirming about the bed, seeking a more comfortable position, while the patient with perforation is lying as still as possible trying to aid his abdominal muscles in splinting the injured area.

As to operation, infolding or excision of the ulcer is naturally of primary importance. Whether this be accompanied by pyloroplasty or gastro-enterostomy depends upon the patient's condition and the surgeon's preference, as there is a diversity of opinion on this particular point.

The acute or early ulcer is distinctly a medical condition and surgeons generally are recognizing that such patients should be given the test of a carefully regulated dietetic course

*Read as part of the Symposium on Chronic Gastric and Duodenal Ulcer, at the meeting of the Southwestern Virginia Medical Society, Wytheville, September 13 and 14, 1922.

of treatment under a competent internist, before an appeal to surgery is made.

Starting from the familiar fact that the taking of food gives relief to the pain of gastric ulcer, Sippy and others have devised a schedule of frequent feedings with the addition of alkalies, which will cure, at least temporarily, about ninety per cent of acute ulcer cases.

The third classification, the chronic or indurated ulcers, deals with the remaining ten per cent. who have either been resistant to medical treatment or have not been so fortunate as to receive such treatment. These cases fall distinctly into the domain of the surgeon.

The clinical difference between the two types is well illustrated by the personal experience of two of my surgical friends. One of them, after having been under weight and below par generally for three or four years, was brought up short one day by a profuse gastric hemorrhage. He consulted the best surgeon of his acquaintance, who advised him to give medical treatment a fair trial. He did and today, some ten years since, is in perfect health. The second for years recognized the fact that he had an ulcer, treated it with diet and alkalies without result, obtaining relief only after a large indurated ulcer was excised and a pyloroplasty done.

A study of the pathological picture in the acute and chronic ulcer shows us the reason for cure by medical means in the one and failure in the other.

The early or acute ulcer is seen to be merely an erosion of the mucosa, impossible to palpate through the stomach or duodenal wall, and difficult to identify even after the mucosa is exposed.

The chronic or indurated type shows a puckered scar with thickening and induration involving all the coats of the bowel and extending for a variable distance from the ulcer proper. When the mucosa is exposed, a deep crater, with hard infiltrated walls, is seen. Obviously such a lesion would be more resistant to medication than the superficial erosion, and it is in just this type of case that surgery is indicated.

How is the clinician to determine with which type he is dealing? A careful history is first in importance, then the X-ray, gastric analysis, stool and blood examinations and general physical examination. And remember that the history frequently shows that medical treatment has been already tried without success. Having decided that he has such a case to deal with, what operation should the surgeon do and why?

He is confronted with a three-fold problem. (1) The ulcer itself, shall it be excised or left? (2) Pyloric obstruction. (3) Drainage of the stomach to permit neutralization of the excessive acidity and to put the ulcer at "rest."

The question of excision of the ulcer must be decided for each case separately, depending largely on position, and this is one of the advantages of pyloroplasty in those cases where the ulcer lies close to the pylorus in either stomach or duodenum. A second reason for the excision of the ulcer is the well-recognized fact that a malignancy may develop in the base of an ulcer. When excision is impracticable, the cautery affords a valuable means for destruction of the ulcer, as advocated by Balfour.

Pyloric obstruction with consequent gastric retention, of course, demands relief which takes the form of gastro-enterostomy or pyloroplasty.

Pylorectomy is coming to play an increasing role in the treatment of ulcer, and, in the extensive, deforming ulcers of the pyloric region, certainly offers the best hope of cure, when we remember that we are also removing a potential cancer, and the differential diagnosis is frequently difficult even with a frozen section. Against pylorectomy must be mentioned the greater extent and difficulty of operation with correspondingly greater mortality.

The fact that rest of the stomach will cure an ulcer has been beautifully demonstrated by Bevan who fed a series of patients through a jejunostomy allowing nothing by mouth, and obtained healing of the ulcer. Ordinarily, we obtain this rest by pyloroplasty or gastro-enterostomy and relieve pyloric obstruction at the same time. The choice of operation depends largely on the individual case, but somewhat also upon the surgeon's preference.

At a recent medical meeting Sippy stated that he had treated hundreds of patients after gastro-enterostomies but had never treated one after a pyloroplasty. Of course, it must be remembered that the number of gastro-enterostomies that have been done is very greatly in excess of the number of pyloroplasties.

And this brings us to the post-operative treatment. By this I mean not only the immediate post-operative period, when the patient is still in the hospital and under the care of the man who operated on him, but after he goes home.

During the past year we have seen ten patients, two of our own and eight done elsewhere, who were having trouble following gastro-enterostomies. Every one of these obtained relief under a bland diet and alkalies. What more striking reminder could we have that we are not giving our ulcer patients a square deal unless we insist on strict adherence to a prescribed diet for a few months after operation?

What should this diet be? Practically a Sippy diet, which is to be gradually increased to a full diet as the patient's condition demands it.

And this brings us back to our original proposition that the surgeon and medical man must join forces in the treatment of gastric and duodenal ulcer, if we want to give the patient the best chance for permanent relief, and incidently improve our results.

Jefferson Hospital.

X-RAY PHASES OF CHRONIC GASTRIC AND DUODENAL ULCER.*

J. F. ARMENTROUT, M. D., Roanoke, Va.

The Roentgen procedure for the diagnosis of chronic gastric and duodenal ulcer has become a well-established method of obtaining objective symptoms for establishing a positive or negative diagnosis as to the presence of chronic ulcer, gastric or duodenal. The technic has been well developed in recent years and now commands the attention of the profession for diagnosis in the gastro-intestinal field.

Organic changes in the stomach or duodenum are accompanied by marked deviations from the normal outline of these organs and, on the correct interpretation of these deviations, depends the accuracy of the Roentgen diagnosis.

Spastic conditions and adhesions often produce defects of stomach or duodenum, very similar to those of ulcer, when it must be definitely determined whether the distortion present is of organic or non-organic origin. The presence of a tender-pressure point directly over and on the defects affords very good evidence but too much reliance must not be placed upon this sign. Series of plates should be made at intervals which it would be well to repeat after administration of belladonna to physiological effect. Pressure defects sometimes simulate those of ulcer origin as well as adhesions due to a chronic cholecystitis.

We also have defects due to partial filling of the duodenum, but this is usually overcome by making examinations with patients in prone position; sometimes, resort must be had to a lateral oblique position. Chronic appendicitis may reflexly cause the stomach or duodenum to assume shapes that closely simulate ulcer defects; but repeated examinations will enable the Roentgenologist to make a reasonably safe differentiation.

Besides the observation of the defect we have hour-glass phenomena, pyloric or duodenal obstruction of varying degrees to be considered of value as indirect signs of the presence of some organic lesion.

Ulcerous lesions in proximity with the cardiac orifice of the stomach are extremely difficult of detection, unless cardiac sphincter is involved, in which case ulcer may be suspected by a stricture of the cardiac sphincter, as shown by collection of opaque medium in the dilated portion of oesophagus just above the sphincter.

The writer believes it a better procedure to make fluoroscopic and radiographic examinations, repeated until decisive features are obtained, as to a positive or negative diagnosis, after which a careful clinical history may be obtained and considered. Frequently, the results of the Roentgen examination are so conclusive, that the history seems immaterial, at least to the Roentgenologist, but in no case is it good practice to ignore the history.

Though X-ray findings are convincing, they are doubly so when backed up by a very definite history.

Study your patient as well as your plates, and your work will be of increasing interest to your professional friends and win for you their confidence and respect.

While in the past few years many advances have been made in the Roentgen art, increasing greatly diagnostic accuracy, nevertheless there is yet room for improvement; and it behooves the Roentgen worker to be on the alert, to employ his best efforts to increased efficiency and accuracy in his particular line, and thereby be of the greatest possible usefulness to the profession.

432 *MacBain Building.*

*Read as part of the Symposium on Chronic Gastric and Duodenal Ulcer, at the meeting of the Southwestern Virginia Medical Society, Wytheville, September 13 and 14, 1922.

NOTES ON RECTAL SURGERY.

By E. H. TERRELL, M. D., Richmond, Va.

The terminal portion of the intestinal tract, which includes the rectum and anal canal, is affected by disease oftener than any other part of the body, with the exception of the nose and throat. Many and varied pathological conditions are to be found here and of them 85 to 90 per cent. occur in the constricted part of the gut, or within its lowest one inch.

Because of its situation and anatomical construction the anal canal is subjected to frequent injury. It is surrounded by strong muscular bands, the external and internal sphincters and levator ani. These muscles exert, at times, considerable pressure upon it in attempting to expel hard fecal masses which have collected in the rectal ampulla, immediately above it; also, puncture of its membrane may occur from the passage of sharp bodies swallowed unconsciously with the food or accidentally.

It should not be assumed, however, without just cause, that traumatism is the only etiological factor in infectious diseases of the anal canal.

The canal is covered by a transitional epithelium called muco-cutaneous tissue, which resembles in some respects both skin and mucous membrane, but has none of the resisting powers of either. Although it has a very abundant blood supply it does not seem to be able to resist or throw off infection as readily as the healthy skin or mucous membrane. Because of the contour of the canal, there is a lack of natural drainage, which accounts for the chronicity of many of the infections.

In early embryonic life a fusion takes place between the proctodeum and hind gut. As a result of this there are left several folds of mucous membrane which constitute the anal valves. The mouths of these valves look upward, and, as was noted first by Beach, in 1909, are favorable sites for the entrance of infection. At times, there seems to have been an incomplete fusion between the hind gut and proctodeum, where later a separation of the tissues takes place. In that case, a pocket or diverticulum is formed, which pathogenic organisms find a most inviting point of attack.

Just beneath the muco-cutaneous covering of the anal canal is a thin layer of fibro-cellular tissue which is of the greatest importance. This is seldom mentioned by writers on rectal diseases, but Gray's Anatomy calls attention to it. Infections which are limited to the inner surface of the fascia are the more numerous and may be termed superficial, while those that break through into the cellular tissues constitute the deeper and, usually, the more serious ones.

Correspondence

Infectious Jaundice.

195 Church Street,
New Haven, Conn.
Nov. 24, 1922.

To the Editor:

The undersigned is desirous of obtaining information regarding the prevalence of Infectious Jaundice in your State. The disease is non-reportable and information regarding its prevalence cannot, therefore, be obtained from the Boards of Health. I shall be grateful for any reports of outbreaks which your readers may care to send me.

George Blumer, M. D.

Proceedings of Societies

MEDICAL SOCIETY OF VIRGINIA.

Financial Report of Secretary-Treasurer for 1921.

Statement of Cash Receipts and Disbursements of the Virginia Medical Monthly and Medical Society of Virginia for the Year Ending December 31, 1921.

RECEIPTS

Cash balance in Merchants National Bank, Richmond, Va., January 1, 1921			$ 1,209.45
Virginia Medical Monthly:			
Ordinary Revenue			
Subscriptions from members	$3,402.27		
Subscriptions from non-members	150.10		
Advertising	7,568.35		
Interest on Bank balances	33.30		
		$11,154.02	
Extraordinary Revenue			
Rent of desk space		40.00	
Net cash receipts			11,194.02
Medical Society of Virginia:			
Ordinary Revenue			
Membership dues	$3,402.28		
Interest on bank balances	33.30		
		3,435.58	
Extraordinary Revenue			
Rent of desk space	40.00		
Magazine subscriptions	114.05		

Sale of exhibit space at the Lynchburg meeting of M. S. V.	364.65		
		518.70	
Physicians Legal Defense Fund			
Advance payments for the year 1922		12.00	
Net cash receipts			3,966.28
			$16,369.75

DISBURSEMENTS

VIRGINIA MEDICAL MONTHLY:

Ordinary Expenses			
Preparation of Journal	$7,542.82		
Salaries	3.216.63		
Extra clerical help	17.50		
Traveling expenses	22.67		
Rent	126.00		
Janitor's service	58.49		
Light and fuel	22.57		
Phone	67.50		
Postage	287.45		
Stationery and supplies	44.90		
Miscellaneous office expenses	7.15		
		$11,413.68	
Outlay			
Office furniture		5.50	
Net cash disbursements			$11,419.18

MEDICAL SOCIETY OF VIRGINIA:

Ordinary Expenses			
Salaries	$1,383.30		
Extra clerical help	208.62		
Traveling expenses	227.08		
Rent	126.00		
Janitor's service	58.51		
Light and fuel	22.56		
Phone	70.29		
Postage	229.50		
Stationery and supplies	76.32		
Printing programs, multigraphing letters, etc	351.51		
Miscellaneous office expenses	18.47		
		2,772.16	
Extraordinary Expenses			
Magazine subscriptions	139.15		
Legal expenses for prosecution of violators of the Medical Practice Act	200.00		
		339.15	
Outlay			
Office furniture		5.50	
Net cash disbursements			3,116.81
Cash balance in Merchants National Bank, Richmond, Va., December 31, 1921			1,833.76
			$16,369.75

RICHMOND, VA., *October* 28, 1922.

This is to certify that I have examined the books and records of the Medical Society of Virginia, showing the cash receipts and disbursements of the Society from January 1, 1921, to December 31, 1921, inclusive, and find them to be correct, as shown in this statement, and that the cash balances in the Merchants National Bank, Richmond, Virginia, both at the beginning and end of the year, have been verified by statements from that bank.

The books and records in the business office of the Society are properly and efficiently kept in order, and the system now in use will answer all requirements and give such information as may be desired.

L. B. EDWARDS.

STATE OF VIRGINIA,
CITY OF RICHMOND, TO-WIT:

This day personally appeared before me, F. E. Partlow, a Notary Public, in and for the City, in the State aforesaid, L. B. Edwards, who by me being duly sworn according to law, deposes and says that the facts set forth in the above statement are true and correct to the best of his knowledge and belief, and acknowledges the signature attached thereto to be his own.

Subscribed and sworn to before me this 28th day of October, 1922.

My commission expires March 20th, 1923.

F. E. PARTLOW,
Notary Public.

Report of Meeting of Members of Executive Council, Legislative Committee, State Board of Medical Examiners, and Members of the Medical Society of Virginia in the General Assembly.

FEBRUARY 1, 1922.

PRESENT: Drs. E. C. S. Taliaferro, Paul Howle, J. W. Preston, H. U. Stephenson, R. A. Moore, F. H. Smith, J. Bolling Jones, Lawrence T. Price (by appointment in place of absent member of Council), P. St. L. Moncure, J. Fulmer Bright, W. W. Wilkinson, J. C. Flippin, Israel Brown, and Thomas G. Hardy.

Dr. Taliaferro was elected chairman of this meeting.

The chairman of the Legislative Committee, Dr. Stephenson, stated the purpose of the meeting: To consider the status of pending bills in the state legislature which affect the practice of medicine, the regulation of drugless healers, with particular reference to the bill sponsored by the chiropractors which, if enacted, will remove that cult from the control of the State Board of Examiners.

It was brought to the attention of this committee that the present General Assembly would not consider favorably new legislation affecting the practice of medicine and that it was probably useless for the medical profession to sponsor any restrictive legislation.

MOVED: That it was the sense of this meeting that no bills be sponsored by the Medical Society of Virginia or the State Board of Medical Examiners changing the present Medical Practice Act, provided, no bill be introduced by the irregular cults which is deemed detrimental to the public welfare.

The following substitute for the above was offered and unanimously adopted:

That the whole matter be left with the Legislative Committee acting jointly with the State Health Commissioner and other health authorities with power to act.

This joint committee having adjourned, the Executive Council was called together and, with Dr. Paul Howle, Chairman, presiding,

Moved and carried unanimously: That the Executive Council approve the above agreement. The Chairman of the Legislative Committee, Dr. Stephenson, presented his report accompanied by a statement showing his expenses in Richmond during the two months' session of the General Assembly.

Moved and adopted: That the Secretary-Treasurer put at the disposal of the Chairman of the Legislative Committee $300.00 or so much thereof as may be necessary to cover the expenses of the Legislative Committee.

Adjourned.

Meeting of Executive Council.

June 17th, 1922.

Present: Drs. Paul Howle, Chairman, Garnett Nelson, Clerk, F. H. Smith, R. L. Williams, E. C. S. Taliaferro (in place of absent member). Constitutional quorum for transaction of business before Council found present. Moved and adopted: That the date of the 1922 meeting of the Medical Society of Virginia be fixed for October 31st, November 1, 2 and 3.

Moved and adopted: That program for this meeting as submitted by the Publication Committee be accepted with the addition of a paper on the "Acute Abdomen," the Publication Committee with Dr. F. H. Smith to select the leader.

Moved and adopted: That the Publication Committee be instructed to investigate the matter of publishing a consolidated medical journal jointly with other medical societies in nearby states.

Moved and adopted: That Drs. Howle and Nelson be authorized to employ a competent accountant to audit the books of the Secretary-Treasurer.

Moved and adopted: That the Secretary-Treasurer be instructed to use all of the provisions of the constitution and by-laws in his efforts to collect accounts from members in arrears.

The Secretary-Treasurer was instructed to report to the meeting in Norfolk concerning the activities of the state health officials in publicly advertising pay clinics in various parts of the state.

The Secretary-Treasurer was instructed to refer to the Chairman of the Judiciary Committee an advertisement of a hospital claiming to cure cancers and which contained the signed endorsement of a member of the Medical Society of Virginia.

Adjourned.

(*To be continued.*)

Richmond Surgical Society.

Reported by Mark W. Peyser, M. D.

November 7, 1922.

Dr. Paul W. Howle, President, in the chair.

Dr. W. W. Dunn reported a case of intracranial hemorrhage in the new-born. The child was delivered by forceps, in March, 1922, labor being dry and the pains having ceased. Presentation was occipito-posterior. There was no apparent injury to the head, but a large-sized hematoma due to prolonged labor, was found. The child was well-developed, but it had a death-like pallor, due, he thought, to intracranial hemorrhage. Examination showed no other apparent abnormality. The mother's pelvis was roomy.

On the following day it was reported that the baby had cried all night. Its temperature was 100°F., pulse 100, the cry a peculiar one. There was difficulty in nursing. On the second day, the temperature was the same, crying had ceased, and the child nursed well that day and the next. On the 4th day, convulsions were reported to have occurred; the temperature was 104°. There was no evidence of paralysis, but considering that there must be intracranial hemorrhage, he called in Drs. McGuire Newton and John Dunn who concurred in his opinion. The child was removed to a hospital, repeated convulsions occurring on the way. Decompression was done on the right side. A hemorrhage of about one-half ounce was found pressing on the right lower temporal lobe and extending to the base. The blood was washed away with saline solution, and the wound closed. Death ensued in four or five hours.

A large number of these cases is being demonstrated postmortem. Two per cent of children die of hemorrhage in the first four days after birth; and it is claimed that many of the cases of spastic paralysis are due to it. He believes that in this case the child's life could have been saved if operation had been done within the first twenty-four hours. The symptoms of interest are the increased temperature, the peculiar cry and the inability to nurse during the first twenty-four hours. He was led off by the improvement in nursing. Answering a question by Dr. Geisinger, whether or not he had seen anything in the literature of the subject on the mortality of operation, he replied that he had not, being more interested in looking up the subject of diagnosis. Cushing, two or three years ago, claimed to have saved life in two or three of the cases.

Dr. W. Lowndes Peple reported *a case of gas gangrene*, as follows: The patient, a negro man, aged about 30 years, was referred to Dr. Peple's clinic at St. Philips Hospital several weeks ago. A week prior to admission, a tree had fallen on his arm and fractured the humerus at about its middle. The patient stated most positively that there was no open wound or break in the skin. His doctor set the fracture, but being taken ill later, another doctor was called in on about the 7th day and sent him to the hospital.

When seen, the hand, forearm and arm were

tremendously swelled and black to the axilla. The skin was broken, and a foul-smelling serosaneous discharge was oozing from the whole limb. Crepitation could be felt over the right pectoral region and as high in the neck as the thyroid cartilage. The temperature was 102° F., and pulse about 110. His general appearance, strange to say, was remarkably good.

A high Guillotine amputation was done, leaving about one and one-half inches of the humerus, and severing skin, muscles and bone all on the same level so as to leave no flaps or crevices. The gas in the fascial planes was under great pressure, escaping forcefully as the knife cut through. Several diseased muscles were dissected out until healthy tissue was reached. Following the teaching that an oxidizing agent should be used in these cases, gauze saturated with apinol was packed over the wound, and this dressing was used continuously throughout the entire time of convalescence. In four or five days, the gas had disappeared from over the neck and chest. In ten days, under local anesthesia, the bone was shortened and the margins of the wound were brought over flap-wise. The patient at no time was seriously ill, and made an uneventful recovery.

The Welch bacillus was found in abundance in smears, and pure cultures were obtained.

In concluding, Dr. Peple reported a case of Dr. LaRoque's of gas gangrene with amputation and recovery.

Discussion.

Dr. Howle said that he saw Dr. Peple's patient before operation, and the condition of the arm was so horrible that he did not think recovery possible.

Dr. J. S. Horsley asked Dr. Peple his opinion of Bull's antitoxin in these cases. He has had two of them, recovery ensuing in one. The principles of treatment outlined appeal to one; and the report brings up the idea of Dr. McGuire, namely, the benefit of calling other surgeons in rare cases to witness the operation.

Dr. Fravel asked Dr. Peple to tell something of gas gangrene as seen in France. The cases Dr. Fravel saw in New York were fatal; but those seen in France were like the one reported tonight.

Dr. Peple, concluding the discussion, said in answer to various questions: Protective sera were tried out by the English, French and American forces in the late war, but not being considered effective, their use was discontinued. The underlying principles of treatment were (1) Guillotine amputation; (2) wide excision of diseased tissues, leaving no flaps, pockets or crevices; (3) perfect drainage to be obtained and maintained; (4) application of some oxidizing agent. It must be remembered that gas penetrates considerably higher in the tissues than do the bacteria. When too much time has not been lost and there has not been too much mangling of the tissues, the percentage of recoveries is high.

Dr. M. E. Nuckols read a paper entitled *Cancer of the Colon with Obstruction.—Report of Cases.*

Discussion.

Dr. Stuart McGuire said the paper is conservative and the position taken a proper one. He does not believe in performing resections on the aged. Only this morning he saw a patient who had had a colostomy done by the Mayos, and who was using a very ingenious apparatus consisting of a flat enameled dish held in position by straps improvised from a pair of suspenders. The pan is filled with toilet paper; and by means of the contrivance the patient avoids soiling himself.

Dr. McGuire reported the following cases now in his hospital: Case I was that of a woman operated upon three weeks ago. There was a napkin-ring obstruction. Operation was easy, the diameter on both sides of the growth being the same. He thought that the anastomosis he affected was a good one, and closed the wound without drainage. Five days later, a lump was noticed in the upper end of the wound through which, shortly after, feces passed. In a week, however, complete healing occurred and the patient is now ready to return home. How the transverse colon, which was left free, opened up in the wound he does not know.

Case II was one of obstruction at the splenic flexure for which there had been two previous operations. In separating the adhesions the large bowel was badly torn. Efforts at suturing being unsatisfactory, a stab-wound was made in the loin and drainage was inserted to the seat of injury. A fistula formed and feces discharged through the stab-wound for a week, but it is now healed and defecation occurs naturally.

Where there is obstruction and the proximal end of the bowel is larger than the distal end. anastomosis is almost certain to fail, and the Mikulicz operation would better be done. This operation consists of bringing the affected loop of bowel out of the wound, fastening it to the skin and cutting it off flush with the abdominal wall and, later, restoring continuity by another operation. It is a life-saving operation but convalescence is prolonged and tedious. Some operators advise side-to-side, others end-to-end, anastomosis; but in all bowel resections the advice of Dr. Horsley should be remembered, namely, the mesentery should be

ligated and divided before opening the lumen of the bowel, thus minimizing the danger of infection.

Dr. Horsley said he has less trouble in operating in these cases when he takes out the colon on the right side. It is well known that fecal fistulae are apt to occur in resection of the transverse colon or of the sigmoid. He has now on hand a case like the first one reported by Dr. McGuire. Here we have originally not a leakage but an abscess which breaks down the stitches, the escape of fecal matter being a result of this and not due primarily to giving way of the sutures.

In performing resection of the sigmoid, he does an end-to-end anastomosis. In the case of a man with solitary ulcer, hiccoughing occurred, the wound broke down, and the bowel movement came through the wound. Upon attempting to make closure, the patient died suddenly, two days later, after suffering much pain. Upon postmortem, the abdomen was found to be full of fecal matter.

No matter where the resection is done, it is best to make an enterostomy in the terminal ileum. Take a medium-sized catheter with two holes in the end and two in the middle. Incise according to the principle of Coffey to the mucosa, and insert the tube into the rectum through the incision. This puts the bowel at rest, and has the further advantage of not producing the irritation that would be caused by inserting a stiff tube through the rectum into the sigmoid. Ten days later, an injection of mineral oil is given, the tube is removed, and there is, usually, no leakage of feces.

Dr. Peple said that the apparent ease with which large-bowel surgery was done in the Mayo clinic was due to a perfected technique and the use of long incisions. He had noticed that Crile, in similar operations, made free use of iodoform water in completing the peritoneal toilet, the solution being made by soaking and squeezing iodoform gauze in warm water. Dr. Crile said that this was similar in its effects to the bismuth-iodoform paste which was packed in the wounds of soldiers undergoing transportation. It retarded bacterial growth and kept the wounds clean.

We must always bear in mind, when resecting the colon, that we are dealing with the colon bacillus, and that serious wound infections are far more prone to occur than when we open the canal higher up.

It was moved, seconded and ordered that the minutes of the society be published in the VIRGINIA MEDICAL MONTHLY.

The Piedmont Medical Society

Held its semi-annual meeting in Charlottesville, November 25, with an attendance of about sixty. Several interesting papers were read and in the evening a banquet was enjoyed at Blue Ridge Sanatorium, after which the program was continued. It was decided to enlarge the territory of the Society so as to include parts of Culpeper, Madison and Greene Counties, and to apply to the Executive Council of the Medical Society of Virginia for a charter as a component society of the State Society.

Dr. W. D. Macon, Charlottesville, is president, and Dr. Lewis Holladay, Orange, secretary-treasurer of the Society.

The Mecklenburg County Medical Society

Held its last meeting at the home of Dr. G. H. Carter, in Boydton, at which time the subject of "Infectious Diseases" was discussed. Dr. Carter was elected to represent the Society in the House of Delegates at the Norfolk meeting of the State Society, and Dr. A. T. Finch was chosen as alternate. At the annual election of officers Dr. W. W. Wilkinson, of La Crosse, was elected president, and Dr. H. M. Snead, of South Hill, secretary, for the ensuing year.

The Raleigh County (W. Va.) Medical Society

Held its regular monthly meeting at the "Spinning Wheel," Beckley, Thursday evening, November 9th, when a very interesting program was rendered and a delicious dinner enjoyed by the forty-two physicians present. After the regular routine business was disposed of, the Secretary-Treasurer submitted his annual report which was ordered adopted. Dr. J. E. Coleman was selected to represent the society in Morgantown, November 30th, when several state officials of the State Association will be present to work out some details for the annual meeting of the association to be held in Beckley next June.

The following officers were elected to serve during 1923: Dr. A. H. Grigg, Beckley, President; Dr. W. W. Hume, Beckley, Vice-President; Dr. G. P. Daniel, Glen Daniel, Vice-President; Dr. Charles S. Smith, Beckley, was re-elected Secretary-Treasurer.

The following visitors appeared on the program. Drs. C. E. Gabel, of Charleston, A. S. Jones, of Huntington, and H. G. Steele, of Bluefield. Dr. O. B. Lynch, of Beckley, in a short talk discussed some phases of practice among children, emphasizing especially the question of adequate nutrition both in infancy and later childhood. He expressed the opinion that doctors as a rule pay too much attention to drug therapy and too little attention to nutrition; that babies are too often weaned because of a belief that breast milk does not agree. He condemned artificial feeding by can directions and pointed to some of the dangers of such practice. He especially deprecated the use of sweetened condensed milk of which Eagle brand is a type. He also called attention to the importance of correct posture in children. He stated that pyelitis and otitis media are too frequently overlooked. He urged physicians to teach parents that diphtheria is largely a preventable disease by the use of toxin-antitoxin. In conclusion, he expressed the desire that all physicians strive by educational means to reduce the incidence of sickness and death among children.

Just prior to the meeting, the executive committee which has charge of all plans for the state meeting next year held a meeting and discussed many plans, and authorized our delegate to Morgantown to act in our behalf and urge that we have the best scientific program in the history of the association. The committee is highly enthusiastic and is leaving nothing undone for the pleasure of the many doctors who will be our guests next June.

CHARLES S. SMITH, *Sec'y.*

The Truth About Medicine

During October, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Lederle Antitoxin Laboratories:
- Diphtheria Toxin-Antitoxin (O.1L+)

H. A. Metz Laboratories, Inc.:
- Alumnol

H. K. Mulford Company:
- Hay Fever Timothy Pollen Extract-Mulford

Parke, Davis and Company:
- Normal Horse Serum—P. D. & Co.
- Rabies Vaccine (Cumming)—P. D. & Co.

E. R. Squibb and Sons:
- Acne Vaccine
- Colon Vaccine-Squibb
- Gonococcus Vaccine
- Meningococcus Vaccine
- Normal Horse Serum
- Pertussis Vaccine, Curative
- Pertussis Vaccine, Immunizing
- Purified Diphtheria Antitoxin (Anti-diphtheric Globulin)
- Pneumococcus Vaccine
- Staphylococcus Vaccine
- Stachylo-Acne Vaccine
- Streptococcus Vaccine
- Tetanus Antitoxin Purified
- Typhoid Vaccine
- Typhoid Vaccine Combined, Immunizing

NEW AND NONOFFICIAL REMEDIES.

Hayfever Timothy Pollen Extract-Mulford.—The liquid is obtained by extracting the proteins from the pollen of timothy. For a discussion of actions, uses and dosage, see the article on Pollen and Epidermal Extracts Preparations and Biologically Reactive Food Proteins, New and Nonofficial Remedies 1922, p. 232. This preparation is marketed in packages containing fifteen consecutive doses for a complete treatment and also in packages containing partial treatments only. H. K. Mulford Co., Philadelphia.

Purified Diphtheria Antitoxin (Antidiphtheric Globulin).—Concentrated diphtheria antitoxin (New and Nonofficial Remedies, 1922, p. 280) is marketed in syringe containers of 1,000 units and in syringe containers of, respectively, 3,000, 5,000, 10,000 and 20,000 units. E. R. Squibb and Sons, New York.

Normal Horse Serum.—This product (New and Non official Remedies, 1922, p. 278) is also marketed in packages of one 10 C.c. syringe. E. R. Squibb & Sons, New York. (Jour. A. M. A. Oct. 21, 1922, p. 1427.)

Novocain Base.—Para-amino-benzoxydiethylaminoethane. The base contained in procaine. The action and uses of novocain base are the same as those of procaine (New and Nonofficial Remedies, 1922, p. 36), but it is soluble in fixed oils. H. A. Metz Laboratories Inc., New York.

Novocain Nitrate.—A brand of procaine nitrate-N. N. R. (New and Nonofficial Remedies, 1922, p. 37). It has the actions and uses of procaine, but is compatible with silver salts. H. A. Metz Laboratories Inc., New York.

Diphtheria Toxin-Antitoxin Mixture (O.1L+).—A diphtheria toxin-antitoxin mixture (New and Nonofficial Remedies, 1922, p. 282) containing 0.1 lethal dose of diphtheria toxin neutralized with the required amount of diphtheria antitoxin. Marketed in packages of three vials, each containing 1 C.c.; also in packages of thirty vials, each containing 1 C.c. Lederle Antitoxin Laboratories, New York.

Acne Vaccine.—Acne bacillus vaccine (New and Nonofficial Remedies, 1922, p. 298) is marketed in packages of four syringes containing respectively 50, 100, 250 and 500 million killed bacilli; in packages of four ampules containing, respectively 50, 100, 250 and 500 million killed bacilli (with a syringe); in vials of 5 C.c., 10 C.c., and 20 C.c., each cubic centimeter containing 1,000 million killed bacilli. E. R. Squibb and Sons, New York.

Gonococcus Vaccine.—This product (New and Nonofficial Remedies, 1922, p. 301) is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed gonococci; in packages of four ampules containing, respectively, 100, 250, 500 and

1,000 million killed gonococci (with a syringe); in vials of 5 C.c., 10 C.c., and 20 C.c., each cubic centimeter containing 1,000 million killed gonococci. E. R. Squibb and Sons, New York.

Meningococcus Vaccine, Curative.—Meningococcus vaccine (New and Nonofficial Remedies, 1922, p. 302) is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed meningococci; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed meningococci (with a syringe); and in vials of 5 C.c., 10 C.c. and 20 C.c., each cubic centimeter containing 1,000 million killed meningococci. E. R. Squibb and Sons, New York.

Pertussis Vaccine, Curative.—Pertussis bacillus vaccine (New and Nonofficial Remedies, 1922, p. 303) is marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed bacilli; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed bacilli (with syringe); and in vials of 5 C.c., 10 C.c., and 20 C.c., each cubic centimeter containing 2,000 million killed bacilli. E. R. Squibb and Sons, New York.

Pertussis Vaccine, Immunizing.—Pertussis bacillus vaccine (See New and Nonofficial Remedies, 1922, p. 303) is marketed in packages of three syringes containing, respectively, 500, 1,000 and 1,000 million killed bacilli; in packages of three ampules containing respectively, 500, 1,000 and 1,000 million killed bacilli (with a syringe). E. R. Squibb and Sons, New York.

Pneumococcus Vaccine.—This product (New and Nonofficial Remedies, 1922, p. 304) is a suspension of killed pneumococci Types I, II, III and Group IV in equal proportions. Marketed in packages of four syringes containing, respectively, 100, 250, 500 and 1,000 million killed pneumococci; in packages of four ampules containing, respectively, 100, 250, 500 and 1,000 million killed pneumococci (with syringe); and in vials of 5 C.c., 10 C.c. and 20 C.c., each cubic centimeter containing 5,000 million killed pneumococci. E. R. Squibb and Sons, New York. (Jour. A. M. A., Oct. 28, 1922, p. 1519.)

Propaganda for Reform.

Spahlinger's Treatment for Tuberculosis.—Sphalinger, according to reports, was a lawyer who abandoned his profession for research work. He appears now to be connected with the Bacterio-Therapeutic Institute, Geneva. According to an article by Spahlinger, the treatment utilized either one or both of two therapeutic principles depending on the nature of the infection. In acute cases, passive immunization with special serums is used. In chronic afebrile pulmonary cases, in nonpulmonary, and in cases "predisposed to" tuberculosis, active immunization with special antigens is employed. No definite information in regard to the prepartion of the product is given. Reports that the British Red Cross is to purchase the treatment are unconfirmed. Reports that the Rockefeller Institute had made an offer to secure the rights for the product in the U. S. proved unfounded. The exact nature of the Spahlinger treatment does not appear to have been divulged, the treatment is in the experimental stage and the reported results lack confirmation. (Journ. A. M. A., Oct. 7, 1922, p. 1264.)

Radioactivity of Waters.—Twenty-five years ago various mineral springs and waters were claimed to have therapeutic virtues because of their lithium content. Today we know that the amount of lithium in natural waters is insignificant, and that lithium is of no therapeutic value anyway. At the present time, many mineral waters are exploited because of their asserted content of radium. However, the rationale of the internal administration of radium is being doubted. Also, relative traces of radio-active substances are practically valueless and the Council on Pharmacy and Chemistry will not accept any radium solution for internal use the dosage of which is less than two micrograms each day or any radium emanation generator which yields less than two microcuries emanation each twenty-four hours. The probable value of radioactive mineral waters may be judged when it is known that it would be necessary to consume 2,810 gallons daily of the water yielding the largest quantity of temporary radio activity in order to obtain the minimum therapeutic dose of two microcuries emanation and that the best water available as regards radium content would require the administration of 1,957 gallons per day in order to obtain 2 micrograms of radium. (Jour. A. M. A., Oct. 14, 1922, p. 1339.)

The Clinical Field of Yeast Preparations.—In March, 1921, the Council on Pharmacy and Chemistry requested its Committee on Therapeutic Research to determine the advisability of undertaking a clinical study of the usefulness in therapy of yeast preparations. Accordingly the chairman of that committee drew up a provisional plan which proposed to utilize the easily observable phenomena of growth, appetite and laxative effect as cumulative indices of all actions and to record this under a variety of normal and pathologic conditions. The plan was submitted to the committee and to others for an opinion. In consideration of the replies received and the unfavorable results published by A. L. Daniels and by A. F. Hess the chairman of the committee recommended that the study be not inaugurated. The chairman reported that he had come to these conclusions: 1. Apart from the occasional imported cases of beriberi vitamin deficiency is not a recognized or diagnosable clinical entity in this country. 2. With ordinary diet yeast does not have any effect on growth, even of babies and children. 3. The one effect of yeast that has been definitely established is the laxative effect. This may be useful in chronic constipation but no direct method of study is at present available for determining its advantages or disadvantages in comparison with other laxatives. After considering the recommendations of the Research Committee, the Council for the present decided against an investigation into the problematic usefulness of yeast as a therapeutic agent. (Jour. A. M. A. Oct. 14, 1922, p. 1354.)

A Pancreatic Hormone in Diabetes. Since the discovery of the important role of the pancreas in carbohydrate metabolism in the body there have been many attempts to supply the missing "regulator" of sugar combustion and attention has naturally been centered on the pancreas in this connection. Significant results have been secured in the Department of Physiology at the University of Toronto by J. J. R. Macleod and his collaborators. An alcoholic extract of pancreas has been prepared which apparently enabled the diabetic animal and man to metabolize sugar better. The investigators are wisely withholding the product from general use until its value is definitely established. (Jour. A. M. A. Oct. 21, 1922, p. 1428.)

Typhoid Vaccination by Mouth.—Besredka has proposed vaccination against typhoid by mouth. His vaccine consists of a pill of bile and a tablet containing a mixture of heat-killed typhoid and paratyphoid bacilli. These are taken three mornings in succession. It is for the future to determine whether or not the method has value. (Jour. A. M. A. Oct. 21, 1922, p. 1446.)

The Reactions of Boston to the "Reactions" of Abrams.—Abrams gave a clinical demonstration of his methods in the laboratory of one of his disciples in Boston. Abrams refused to submit the method, it is said, to any test offered, but confined himself to demonstrating the presence of lesions the existence of which

could be proved only by postmortem examination. A member of the staff of the Boston Medical and Surgical Journal, a man in perfect health, was selected for experiment. By his diagnostic methods Abrams discovered in this healthy individual a streptococcus infection, tuberculosis of the intestinal tract, congenital syphilis and intestinal sarcoma. Otherwise the man was all right. It is understood that the volunteer inconsiderately refused to submit to a postmortem examination. (Jour. A. M. A. Oct. 28, 1922, p. 1524.)

Book Announcements

Physiology and Biochemistry in Modern Medicine. By J. J. R. MACLEOD, M. B., Professor of Physiology, University of Toronto. Assisted by ROY G. PEARCE, A. C. REDFIELD, and N. B. TAYLOR, and by others. Fourth Edition. St. Louis. C. V. Mosby Company. 1922. 8vo. 992 pages, with 243 illustrations, including 9 plates in color. Cloth. $11.00.

Diseases of Women. By HARRY STURGEON CROSSEN, M. D., F. A. C. S., Clinical Professor of Gynecology, Washington University Medical School, and Gynecologist in chief to Barnes Hospital and Washington University Dispensary, etc. Fifth Edition, Revised and Enlarged. St. Louis. C. V. Mosby Company. 1922. 8vo. 1005 pages. with 934 engravings, including one color plate. Cloth. Price $10.00.

Physical Diagnosis. By W. D. ROSE, M. D., Lecturer on Physical Diagnosis and Associate Professor of Medicine, University of Arkansas. Third Edition. St. Louis. C. V. Mosby Company. 1922. 8vo. Cloth. 755 pages. Price $8.50.

Practical Organotherapy. The Internal Secretions in General Practice. By HENRY R. HARROWER, M. D., F. R. S. M. (Lond.) Third Edition. Re-written and enlarged. 1922. The Harrower Laboratory, Glendale, Calif. 8vo. 416 pages. Cloth. Price, $1 net.

It may as well be said at the outset that this is a house-organ in book form, a catalogue and price-list; and, yet, it will not do to "let it go at that."

The author takes up, first, the basis of organotherapy, and, in order, pluriglandular formulas; the diagnosis of internal secretory disorders; every-day organotherapy, in which applications are made of the statements set forth in the preceding section; and endocrine queries and answers; closing with an appendix and index.

Wherever possible, and the possibilities are many, the author's formulas and books (price mentioned) are recommended.

In defending the pluriglandular theory, it is written that "it is not difficult to understand that a general influence for harm—toxic, nutritional or emotional—hardly can be expected to limit its effects to a single small part of the organism. A severe toxemia such as we find in pneumonia, typhoid fever, intestinal stasis or poisoning with alcohol, morphine or other drugs, deranges the functions of the body as a whole, although in one instance a certain part of it, say the liver, may be more obviously disordered than another. This applies equally to the endocrine glands, and the writer has frequently said with emphasis that 'there never was a uniglandular endocrine disorder.'"

The causes of failure with organotherapy are set down as due to their use in long-standing and advanced cases in which other measures have been tried repeatedly and have failed; inactive preparations and unresponsive organisms where the re-education of the worn-out endocrine glands is no small task; too short a period, or periods of treatment; the use of single instead of pluriglandular, preparations because "it is not possible for a single endocrine organ to be affected slightly or seriously, without reflex (hormonic) effects upon others of the allied organs"; the expectation of cure in cases generally conceded to be incurable; and, finally, most important, an incomplete diagnosis.

The author says he has made no attempt to explain the "why" and the "how," but that "here is offered the 'real meat'—the boiled-down essentials of a subject which, according to Leonard Williams (London), 'already unfolds before the astonished view of the seeing eye, a land of promise beside which the discoveries of Lister and Pasteur are destined to pale into honorable insignificance.'"

There is no doubt that the book is of value whatever one may think of its "reason for being."—M. W. P.

The Female Impersonators. A Sequel to the Autobiography of an Androgyne and an account of some of the author's experiences during his six years' career as instinctive female impersonator in New York's Underworld; together with the life stories of androgyne associates and an outline of his subsequently acquired knowledge of kindred phenomena of human character and psychology. By RALPH WERTHER—JENNIE JUNE ("Earl Lind"). Author also of "The Riddle of the Underworld." Edited with introduction by ALFRED W. HERZOG, Ph. B., A. M., M. D., Member of

the New York and the New Jersey Bar: Editor of the Medico-Legal Journal, New York. The Medico-Legal Journal. 1922. Cloth. xii and 295 pages, with 19 illustrations. Price $3.00, including postage within United States.

The Propaganda for Reform in Proprietary Medicines Vol. 2, 1922. Containing Reports of the Council on Pharmacy and Chemistry and contributions from the A. M. A. Chemical Laboratory and from The Journal of the American Medical Association. Cloth. Price, $2.00. Pp. 603 with illustrations. Chicago: American Medical Association, 1922.

The present book is the second volume of the "Propaganda for Reform in Proprietary Medicines." The first volume ran through nine editions. The ninth edition contained (1) the most important reports of the Council on Pharmacy and Chemistry, (2) the reports of the A. M. A. Chemical Laboratory, and (3) those articles from *The Journal of the American Medical Association* which deal with the problems of proprietaryship in medicine and the furtherance of rational drug therapy. All of this material covered a period prior to 1917.

The present (second) volume contains similar material covering the period from January, 1917, to April, 1922, inclusive. Like Volume 1, this volume is divided into four parts: *Reports of the Council on Pharmacy and Chemistry; Reports of the A. M. A. Chemical Laboratory; Contributions from the Journal: Proprietary Products; Contributions from The Journals Miscellany.*

A comparison of the material that has appeared in Volume 1 with that which appears in this volume will reveal the changing conditions in the proprietary medicine field. The present volume will also be found of interest in its portrayal of the changed conditions in proprietary medicines brought about by the World War.

This book is not only valuable for the information it contains, but it is also interesting. It makes clear the work of the Council on Pharmacy and Chemistry, the A. M. A. Chemical Laboratory and *The Journal of the American Medical Association* in their several capacities as servants to the medical profession and as champions of rational medicine. The book should be in every physician's library, and more than that, should be within reach for convenient reference.

"Feeding the New Family."

The State Bureau of Vital Statistics has just issued an illustrated booklet, under the above caption, which is to be sent to the newly married as a companion booklet to the "New Family" published two years ago.

This booklet, though written in popular style, contains the result of the latest investigations in nutrition. It calls the special attention of the expectant mother to the importance of a prenatal diet composed largely of milk and leafy vegetables, for the lime and other material needed for the tooth and bone formation of the child, and to fit her for nursing it. Women are warned against midwives.

Richmond's 1921 Health Report.

The Bureau of Health of the Department of Public Welfare of Richmond has just issued its 1921 annual report, which shows that excellent work is being done by those in charge. The death rate for 1921 was 14.6 per 1,000 population, which is the lowest rate ever recorded in this city. The average age of all persons dying during that year was 40 years, which shows an increase in average age at death of nearly five years since 1911. The death rates from practically all the more important causes of death were lower in 1921 than in 1920. Cancer was the only one of the chronic diseases which showed an increase during the year.

Vital Statistics for Virginia in 1921.

The death rate for the whole state of Virginia during 1921 was 12.15 per 1,000 population, which shows a decrease as compared with 1920. There were 180 suicides, or 53 more than in 1920. There were 1,604 deaths from all forms of accident. Of these, 140 were killed in automobile accidents, which is 43 more than in 1920; 202 died from burns, 149 from drowning, and 319 were homicides. The tuberculosis death rate showed a decrease and the typhoid fever rate a slight increase over the previous year.

Colorado Takes the Right Step.

It is announced that Colorado people have voted against antivivisection, those favoring antivivisection being outnumbered by about six to one. In behalf of science and in the interest of humanity, Colorado is to be congratulated and thanked for this right step in the right direction.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D.,
Editor.

G. H. WINFREY,
Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS,
Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 DECEMBER, 1922 No. 9

Editorial

Deterrents to the Advancement of Clinical Medicine.

That was a well drawn indictment of contemporary deterrents to the progress of clinical medicine, made by Sydney R. Miller, Johns Hopkins University, in his presidential address at the sixth annual session of the American Congress on Internal Medicine, held in Rochester, Minnesota, April 5th, 1922.

Following an era of structural pathology, he observes that medicine is now under the influence of a scientific drift which abounds with a multitude of laboratory tests as the result of the study of function. This era of the study and testing of function is crowded with innovations and inventions for the examination of the organs; this influx of new methods is associated with, if not resulting from, a decided increase of specialists and specialties. These influences and factors, occurring in the midst of professional progress of the last few decades, are really deterrents to medical progress. The elaboration of examinations by laboratory investigations and by special methods of many sorts is tending to overwhelm the art rather than advance and improve it. But the usefulness and advantages of essential and thoughtfully selected examinations by the laboratory specialist can not be gainsaid. It is an unquestioned fact that clinical practice and laboratory study must go hand in hand if medical practice is to improve. This, however, does not mean that the practice of the needless laboratory and technical investigations is not a great deterrent to the progress of the art of medicine. The keen and discerning mental processes of the clinician must not be dulled by inaction as laboratory reports are reviewed for diagnosis.

Miller says there are certain evils appearing in practice as follows:

(1) "A tendency prematurely to accept and apply new laboratory tests of promise.

(2) "The indiscriminate utilization of accepted laboratory procedure is in reality of value only in a limited domain.

(3) "The improper interpretation of tests of known value through ignorance of their clinical significance.

(4) "An unwise reliance on positive laboratory findings to establish a diagnosis to the exclusion of other data that may, perhaps, be much more important."

Specialism also has become a deterrent to clinical progress in medicine, as pointed out by Miller. One would not gainsay that advantages have come to medicine as the result of specialism. One has only to review the march of medicine through the last quarter of a century to note the striking influence of specialism upon medical progress. But Osler's observation is to the point when he said: "The extraordinary development of modern science may be her undoing. Specialism has fragmented the specialties themselves in a way that makes the outlook hazardous. The workers lose all sense of proportion in a maze minutiae." Miller goes on to say: "Specialism can not probably be checked, but unless its abuses are restrained, a dark era in clinical medicine will have to be faced. Sanity extremes never mix."

Again, changes in medical practice, as group clinics, result from modern specialism. Undoubtedly, group practice under well ordered and well defined limitations offers many advantages to both the progress of medicine and the welfare of the people. Fundamentally, the association of specialists or group practitioners, for the purpose of associate study of disease and its treatment, should bring better end results to patients.

The association of specialists under a cooperative plan brings to bear the possibility of making analytical and diagnostic study of

complex cases heretofore not readily accomplished. The grouping of men, however, has certain deterrent influences and these handicaps may as well be faced. These handicaps pertain more to the relationship of practitioners to one another than they do to medical progress. But it must be conceded that no great and lasting improvement can come in medicine, which fundamentally affects harmfully the interests of the general practitioner. The general practitioner is yet the bone and sinew of the medical profession. The general practitioner's interests and the general welfare of the people go hand in hand. The progress of medical invention and medical diagnosis under group medicine can not improve the people's interests, if in this process, the level of intelligence of the general practitioner suffers. The level of intelligence must necessarily parallel the material interests; men of better training can not afford to pursue the vocation of general practitioners if the emoluments are diminished by contact and competition with group practice. But, if group practice can be made an aid and assistance to the general practitioners in practice, assisting in diagnosis and in first steps of therapy in complex cases, backing up the general practitioners in their efforts to induce patients who need careful therapy to take it, opening new channels of thought and directing attention to possible avenues of treatment, then medical practitioners and the general public will be greatly benefited by this new alignment in the profession.

Then, in so far as group medicine assists and supports the general practitioner, it will be an aid and help to medical progress.

John Staige Davis, M. A., M. D.

Our New President.

Dr. John Staige Davis, the new President of the Medical Society of Virginia, comes of a family long prominent in the professional and educational life of Virginia. His grandfather, John A. G. Davis, was professor of law in the University of Virginia, 1830-1840; his father, Dr. John Staige Davis, was graduated from the University of Virginia in 1840 with the degree of Master of Arts, and in 1841 with the degree of Doctor of Medicine; after medical study and practice elsewhere, he settled in Charlottesville and became Demonstrator of Anatomy in the University of Virginia in 1845. In 1856 he was elected Professor of Anatomy, Materia Medica and Botany, which he taught, with the exception of Botany, until his death in 1885. To him more than to any other one man is due the credit of establishing the thorough work in Anatomy in which the University of Virginia long stood prominent among the medical schools of the country. Even now, thirty-seven years after his death, his reputation as a teacher, physician, and man of culture stands out in the history and traditions of the University. Dr. Cabell said of him: "In the relations of private life he was true and just in all his dealings, faithful to his friends and habitually punctilious in dispensing the courtesies which beautify social intercourse among men."

Our President for 1923, Dr. John Staige Davis, was born in 1866, and thus grew up in an environment of scholarship and culture well suited to bring out the best that was in him. He was graduated as a Master of Arts of the University of Virginia in 1888 and as Doctor of Medicine in 1889. From 1889-91 he taught at Tulane University, New Orleans; '91-'92 was spent abroad in medical study in Berlin and Vienna after which he returned to New Orleans where for one year he was visiting physician to the Charity Hospital. Returning to Charlottesville, he became instructor in medical biology and pathology at the University of Virginia in 1893, and in the following year

he became adjunct professor of pathology and hygiene, a position which he held until 1900. During this period Dr. Davis introduced into the medical course at the University laboratory work in pathology, thus becoming one of the pioneers of the new era which was to transform the medical teaching of his alma mater from the purely didactic to the laboratory type of instruction.

In 1900 Dr. Davis became Professor of the Practice of Medicine at the University a chair which he still holds. His extensive training in modern scientific and practical medicine soon brought him into great demand as a consultant throughout the country accessible to Charlottesville and the reputation thus established contributed largely to the upbuilding of the clinic at the University of Virginia Hospital. Of late years the growth of this clinic and the increase of teaching duties has led him to confine his work largely to the Hospital.

Dr. Davis is an outstanding figure in his University, his community and the state. He is one of those men who brings into every sphere of activity in which he engages a personality which is all his own, a personality which endears him in a peculiar manner to his patients, his students, and his community. One cannot imagine his having an enemy. If called upon to characterize him by one title, probably all who know him would select at once "The Beloved Physician" as most fittingly serving this purpose. The Medical Society of Virginia maintains its allegiance to the highest ideals of our profession in choosing him as its President for the coming year.

Good Roads! Good Roads!! Good Roads!!!

If you want good roads in this State, see your representatives in the legislature now and help the Governor to make up his mind. Note what Governor Trinkle states in a public letter he is willing to do:

"I want to state I am willing to call an extra session of the general assembly for a bond issue, provided the request comes to me from a substantial majority of the members of the general assembly by December 15, 1922, and by a substantial majority, I mean a safe working majority, sufficient to meet the hazards of a legislative body. Or, I am willing to call an extra session of the general assembly for the purpose of raising temporary funds for 1923, or for the purpose of providing funds for 'paying as you go,' provided a substantial majority of the members of the general assembly request the call of the same for either one of the plans.

"For the information of the public I might state that under the constitution, the general assembly can convene on application of two-thirds of the members of both houses and when in session can consider any matters they desire to consider."

News Notes

To All Of Our Readers We Wish A Merry Christmas, and Health, Happiness and Prosperity in the New Year.

Post Graduate Schools for Veterans' Bureau Physicians.

In order to render the best possible professional care and treatment to disabled ex-service men, Colonel C. R. Forbes, Director of the Veterans' Bureau announces that he is about to establish Post Graduate Schools for physicians now connected with the Bureau and those who wish to join this Service.

There will be two Schools for the teaching of the diagnosis, care and treatment of pulmonary tuberculosis, one at Fitzsimons General Hospital, Denver, Colorado, and the other at U. S. Veterans' Hospital No. 41. New Haven, Conn. The courses at these hospitals will be uniform and will run simultaneously. Each course will last two months, and will include collateral branches of medicine such as pathology, x-ray plate interpretation, physiotherapy, etc.

Before attending the Schools physicians now in the Service will be given a preliminary course which will be established under competent instructors in each of the Veterans' Hospitals for tuberculosis. They will then be selected to take the Post Graduate course at Fitzsimons or New Haven. Specialists not connected with the Bureau will be invited to attend and give lectures to the students. It is anticipated that at least three courses of two months' duration each can be run during the year in the east and west.

As more physicians with special knowledge of tuberculosis than are already in the Service will soon be needed it is hoped that this demand will be supplied from the profession at large. Applications for admission to the

Schools with a view to service in Bureau hospitals may be sent to Colonel C. R. Forbes, Director, Veterans' Bureau, Washington, D. C., —Attention Clinical Director of Tuberculosis.

The Southern Medical Association

Held its sixteenth annual meeting in Chattanooga, Tenn., in November, under the presidency of Dr. Seale Harris, of Birmingham, Ala. There was a registered attendance of nearly 1,900 and the meeting was in every way a success. Dr. Walter S. Leathers, Oxford, Miss., was elected president for the coming year; Dr. Lawrence T. Royster, Norfolk, Va., vice-president, and Dr. M. Y. Dabney, Birmingham, Ala., was reappointed editor and publisher of the *Southern Medical Journal.* It was voted to hold the 1923 meeting in Washington, D. C.

Married.

Dr. G. B. Dudley, Jr., Danville, Va., and Miss Priscilla Humbert, Low Moor, Virginia, December 6.

Dr. Charles F. Rinker and Mrs. Louisa D. Hall, both of Upperville, Va., November 15.

Dr. Roger H. DuBose, Roanoke, Va., and Miss Lucy Ross, East Orange, N. J., October 4. Dr. DuBose graduated in Richmond in 1918 as a member of the '18 class of the North Carolina Medical College.

Dr. William Landon Brent, Colonial Beach, Va., and Miss Lucille Lewis, of Birmingham, Ala. They left a few days later for an indefinite tour of Europe.

Dr. John E. Evans, Wilmington, N. C., and Miss Sara Shepherd, Chatham, Va., November 28.

Dr. John Marshall,

Formerly dean of the Medical School of the University of Pennsylvania and professor of toxicology, who retired last June because of having reached the age limit set by the board of trutstees, has been appointed professor emeritus of toxicology and chemistry of that school.

The National Board of Medical Examiners

Announces the following dates for its next examinations:—

Part I: February 12, 13 and 14, 1923.

Part II: February 15 and 16, 1923.

The fees for these examinations have been continued at the reduced rate for another year. Applications for these examinations must be forwarded not later than January 1, 1923. Application blanks and circulars of information may be obtained from the Secretary of the National Board, Dr. J. S. Rodman, Medical Arts Building, Philadelphia, Pa.

Dr. R. H. Fuller,

Clover, Va., we understand is building a hospital in that place for the care of his private practice.

1923 Alvarenga Prize.

As all essays competing for the $300 Alvarenga prize must be in hand in proper form before May 1, 1923, those interested should at once write and secure full details from the secretary, John Girvin, 19 South 22nd Street, Philadelphia, Pa. The prize will be awarded July 14, 1923.

Hospital Fires.

We note from the *Journal of the A. M. A.* that during 1919 and 1920 there occurred 870 fires in institutions classified as hospitals, asylums and sanatoriums, or an average of more than one fire a day in that type of institution.

When it is realized that most fires are preventable, this should be cause for thought and investigation, that the helpless in these institutions may be better safeguarded.

A New Camp of Sons of Confederate Veterans,

To be known as the Dr. Thomas Lee Settle Camp, was organized at Upperville, Va., November 23. Dr. E. A. Moore, Marshall, was elected commandant, and Dr. Frederick Gochnauer, Upperville, first lieutenant-commander.

The Abbott Laboratories,

Of Chicago, have purchased the Dermatological Research Laboratories of Philadelphia, and took over the control of them on November 1. They will continue to be operated in Philadelphia, under the direction of Dr. Geo. W. Raiziss, head of the Department of Chemistry, and his corps of specially trained assistants. The Dermatological Research Laboratories were the first in the United States to produce Arsphenamine during the war when there was such a scarcity of this article. As explained in the Abbott advertisement, orders for "Dri" products will be filled from the Philadelphia Laboratories or from the home office of the Abbott Laboratories in Chicago.

S. C. Chiropractor Fined.

It was announced that a Charleston, S. C., chiropractor was recently found guilty of practicing medicine without a license and, as he had formerly been convicted under a similar charge, the judge imposed a sentence of ninety days in jail or a fine of $300.

Asiatic Cholera Reduced in Russia.

Asiatic cholera has been so successfully combated in Russia by a wholesale inoculation of the people, under the auspices of the American Relief Administration, that the disease now seems on the wane. In the Volga basin and the districts of Orenburg and Ufa, where in 1921 there were 93,784 recorded cases of Asiatic cholera, there were this summer only 5,386 cases, or a decrease of more than 94 per cent. for that area.

The Virginia Society of Oto-Laryngology and Ophthalmology

Held its meeting at Norfolk, November 1, 1922. The following were elected officers for the ensuing year: Dr. Elbyrne Gill, Roanoke, President; Dr. Joseph A. White, Richmond, Vice-President; Dr. Emanuel U. Wallerstein, Richmond, Secretary-Treasurer.

Hereafter, meetings will be held once a year. The next meeting is scheduled for sometime in April at Richmond. The exact date is to be fixed by the Executive Committee and will be announced later.

Hynson, Westcott & Dunning,

The well known drug firm of Baltimore, has just erected and moved into its own building at Charles and Chase Streets, that city. The building is artistic in appearance and adapted to accommodate the several departments of their rapidly developing business, which began in a small way in 1889 and has now grown to a million a year, with an organization of 125 people. Their unique sales department alone comprises 19 men who visit physicians in all parts of the United States, but do not sell goods. Thirty-five of their products have been accepted by the Council, and are advertised in this journal. Mr. H. R. Hynson, one of the founders, died in 1921, but their growing business is now under the immediate supervision of Messrs. James W. Westcott and H. A. B. Dunning.

The Kentucky State Medical Association,

At its annual meeting, held recently in Paducah, elected Dr. Frank Boyd, of Paducah, president for the ensuing year, and re-elected Dr. Arthur T. McCormack, of Louisville, secretary.

Dr. Henry C. Carson,

Recently of Exeter, Va., announces that his post-office is now Dunbar, Wise County, Va.

Dr. George B. Martin,

Formerly of this city, after spending over three years at the U. S. Public Health Hospital, Oteen, N. C., has moved into a home of his own just outside of Ashevile, N. C.

Dr. William R. Weisiger,

After a service of three years on the House Staff of the Manhattan Eye, Ear and Throat Hospital, New York City, has returned to Richmond and will limit his work to the above named specialties. He has offices at 416 Methodist Publishing Building.

Dr. Samuel Newman,

Formerly of Danville, Va., has completed his work in Poland as Medical Commissioner for Congress Poland of the American Joint Distribution Committee, and is now studying nutrition problems in the University of Vienna.

Dr. W. A. Lucas,

Who has been located at Pulaski, Va., since returning from service in the World War, has located in Knoxville, Tenn. with offiees at 425 West Clinch Street.

Dr. Cullen S. Pitt,

Of this city, announces the removal of his offices to 2101 Grove Avenue.

Dr. Hamilton J. Slusher,

Recently of Boissevain, Va., has located in New Market, Maryland, where he will continue the practice of his profession.

1921 Death Rates.

Compilations made by the Bureau of the Census indicate that 1921 was a remarkably healthful year. Record low death rates appear for nearly all areas. The trend of the tuberculosis death rate was downward, while that for cancer still increases. There has been an increase in the number of fatalities resulting from accidents caused by automobiles and other motor vehicles of 41.2 per cent. from 1917 to 1921.

The Near East Relief Campaign

Is now one of the most worthy causes before the people of this country. Five dollars

saves the life of a child in the Near East for a month, or sixty dollars for a year. Seventeen cents saves one life for a day. "Lend a hand!"

The North Carolina Hospital Association

Held its annual meeting at Wilson, November 2, under the presidency of Dr. John A. Williams, of Greensboro. Dr. Eugene B. Glenn, Asheville, was elected president for the coming year, Dr. Chas. A. Woodard, Wilson, vice-president, and Dr. James R. Aleqander, Charlotte, secretary-treasurer.

The Mississippi Valley Medical Association,

At its annual meeting in Rochester, Minn., in October, elected for its new president Dr. Henry Enos Tuley, of Louisville, Ky., who had been secretary of the Association for the past twenty-five years. Dr. Tuley was prevented from attending this meeting by illness. Dr. John L. Tierney, St. Louis, was elected secretary of the Association. The next meeting is scheduled to be held at Hot Springs, Ark.

Dr. Fitzhugh L. Banks,

Formerly of this State and a graduate of the '09 class, Medical College of Virginia, after several years spent at Slab Fork, W. Va., has moved to Richmond. He is located on Three Chopt Road, Westhampton, and is engaged in general practice. Dr. Banks also has offices in the Professional Building, this city.

Health Board For Fredericksburg.

The Fredericksburg, Va., Board of Health was recently reorganized with W. A. Bell as president. Drs. Lee Cooke and F. T. Cassiday were the doctors elected as members. Dr. J. N. Barney is health officer of the city and in this way a member of the Board.

Dr. Joseph T. McKinney,

Roanoke, Va., announces removal of his offices from MacBain Building to 618-620 Anchor Building, that city.

Associated With Dr. W. B. Hopkins.

Dr. William Patterson, recently of Danville, and Dr. Edwin N. Maner, of Atlanta, Ga., of the class of '17, Emory University, are associated with Dr. W. B. Hopkins of Richmond, in the treatment of diseases of the eye, ear, nose and throat.

Dr. Charles W. Putney

Has located in Covington, Va., where he will be engaged in general practice. Dr. Putney was graduated from the Medical College of Virginia in 1921, after which he served an interneship at Grace Hospital, New Haven, Conn.

Va., of the '07 class, University of Virginia,

Dr. Richard B. Whitaker,

Of Whiteville, N. C., a graduate of the former University College of Medicine of Richmond, in the class of '12, has been elected vice-president of the Columbus County (N. C.) Medical Society.

The American Medical Editors' Association

Held its fifty-third annual meeting in Cleveland, October 16 and 17, under the presidency of Dr. Frank C. Lewis, of New York. The papers read were up to the usual high mark. The annual banquet was held on the first evening. Dr. Henry O. Marcy, of Boston, was elected president: Dr. Chas. J. Whalen, of Chicago, first vice-president; Dr. F. H. McMechan, of Avon Lake, O., was re-elected secretary-treasurer; and Dr. H. Edwin Lewis, of New York, was elected chairman of the executive committee.

The Association of Surgeons of the Chesapeake and Ohio Railway

Held their sixth annual meeting at White Sulphur Springs, W. Va., November 17 and 18, with an attendance of one hundred. The scientific program was up to its usual good mark. Officers elected for the ensuing year are:—President, Dr. S. W. Hobson, Newport News, Va.; Vice-Presidents, Dr. C. C. Coleman, Richmond, Va., Dr. R. K. Buford, Charleston, W. Va., and Dr. C. E. Wamsley, Newport, Ky; Secretary-Treasurer, Mr. G. E. Meanley, Richmond, Va.

Members of the Executive Committee are: Drs. J. M. Salmon, Ashland, Ky.; Oscar Bloch, Louisville, Ky.; E. D. Allgaier, Cincinnati, Ohio; G. S. Hartley, Clifton Forge, Va.; Wm. A. Buchanan, Hammond, Ind.; and R. J. Wilkinson, Huntington, W. Va.

The place for the next meeting is to be decided upon later.

Xmas T. B. Seals.

Have you bought Christmas Seals to help in the fight against tuberculosis? They are still on sale all through the State and your mite will help a good cause. Get your seals today!

To organize a Medical Society in the Clinch Valley.

A movement is on foot to organize a Medical Society along the Clinch Valley division of the Norfolk and Western and Louisville and Nashville Railroads, composed of the counties of Tazewell, Buchanan, Russell, Dickenson, Wise and Lee. This society will be similar to the Southwestern Medical Society, comprising counties along the Norfolk and Western Railroad from Bristol to Roanoke. Each county in the State is supposed to maintain an organization which is a component of the State Society, but it has been found that it is very difficult to hold meetings in the counties where only a few doctors are located.

In these counties there are about 135 active practitioners who, if they so elect, can form an active organization which can do good scientive work and greatly improve and strengthen the profession in this locality. Such a society could at times arrange joint meetings with the Southwestern Virginia Medical Society, or the Mercer County (W. Va.) Society, both active and progressive societies with from 75 to 150 members.

Dr. J. A. McQuire, of Norton, Virginia, Dr. S. C. Couch, of Cleveland, Va., and Dr. Isaac Peirce of Tazewell, Va., are sending cards to the doctors in their immediate locality, asking for an expression of opinion, and it is hoped they will get a prompt and favorable response, and meet with hearty co-operation in their efforts to organize the new society.

The National Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions

Was organized at a meeting in Philadelphia on November 20. Its aims and purposes include the study and solution of all problems of a medical nature involved in police and fire department work. The standardization of the requirements is one of the first problems which will engage the attention of the Association. Atlantic City, N. J., was selected for the place of meeting in next September, and Dr. Hubley R. Owen, chief police surgeon of Philadelphia, was elected first president of the Association.

Dr. and Mrs. B. L. Phillips,

Of this city, returned home the latter part of November from Palmyra, Va., where the doctor went on a hunting trip.

Dr. G. W. Brown,

Superintendent of Eastern State Hospital, Williamsburg, Va., is much improved after a recent illness.

Officers of Club.

Dr. Garnett Nelson has been elected president of the University Club of Richmond, for the ensuing year, and Dr. L. J. Whitehead was elected one of the directors.

Dr. Claude N. Rucker,

Formerly of Clifton Forge, Va., but now of Danville, Va., has been appointed captain of the medical corps, Virginia National Guard, and assigned to duty with Hospital Company No. 10, Danville, to succeed Captain William Patterson, transferred to the unassigned list on account of his removal to Richmond, Va.

Dr. Edward Magruder,

Charlottesville, Va,, has been re-elected national chieftan of the American Clan McGregor Society, which position he has held since its organization in 1909.

Dr. and Mrs. J. M. Bland,

Boykins, Va., stopped for a visit in Richmond on their way to atend the conference of the World's Women's Christian Temperance Union, in Philadelphia.

Dr. Harry E. Brooks,

Of the class of '17, Medical College of Virginia, has located at Clayton, N. C., after practicing for sometime at Sunbury, N. C.

Bigelow Medal Given Dr. Keen.

Dr. W. W. Keen, of Philadelphia, is the recipient of the second Henry Jacob Bigelow medal, given by the Boston Surgical Society. The first medal was bestowed upon Dr. William J. Mayo.

New Sanitarium Destroyed By Fire.

The Alleghany Sanitarium at Goshen, Va., was destroyed by fire on November 30, the loss being estimated at between $100,000 and $150,000, only partly covered by insurance. This building was formerly run as a summer hotel but was recently purchased by a corporation formed of Northern men with a view to remodeling and opening it as a sanitarium.

Wanted:

Position as doctor's office assistant by an undergraduate nurse with a knowledge of stenography and routine laboratory work.

Splendid recommendations. Willing to start on moderate salary. Address "C. J. M."; care this journal. (Adv.)

Physician Wanted.

Wanted a physician in one of the most prosperous sections of the Eastern Shore of Virginia. Can do well from the start and make money. Must be energetic and up-to-date. Refer to Dr. L. F. James, 424 North 25th Street, Richmond, Va. (Adv.)

Obituary

Dr. John J. Terrell,

Intimately connected with the history of Lynchburg, Va., and community for many years, died at his home in Campbell County, November 7, at the age of 93 years. He was born in Patrick County, Va., and when a boy moved to Campbell County where he had since made his home. Upon completion of his academic education, Dr. Terrell studied medicine and received his diploma from Jefferson Medical College in 1853. He saw service in the Mexican War and in the War Between the States. During the latter, he was one of two assistant surgeons in charge of Confederate hospitals in Lynchburg. He was one of the oldest Masons in the State, had served in the General Assembly from Campbell County, and was identified with many interests in that section. He was an honorary member of the Medical Society of Virginia.

Dr. Terrell's wife preceded him to the grave by three years. About six months before her death they celebrated their sixty-second anniversary. Dr. Terrell is survived by two daughters and three sons, two of them being Dr. A. W. Terrell, of Lynchburg, and Dr. T. K. Terrell, of Campbell County.

Dr. William S. Cline

Died November 19 at his home in Woodstock, Va., at the age of 78 years. His ill health dated from a fall about six months ago, since which time he had failed rapidly. He is survived by one daughter.

Dr. Harry Richard Smith

Died suddenly at his home in Appalachia, Va., November 27, death being due to a stroke of apoplexy. He was thirty-six years of age and had received his medical education at the Kentucky School of Medicine, Louisville, from which he graduated in 1908. He was a member of the Wise County Medical Society and had been a member of the Medical Society of Virginia since 1910. His wife and mother survive him.

Resolutions on the Death of Dr. Harry R. Smith.

The following resolutions and preamble were adopted at the last meeting of the Wise County Medical Society:

WHEREAS, It has pleased the all-wise and just God to remove from our midst a most loyal member, and a devoted, esteemed and skilled physician, Dr. Harry R. Smith, who died at his home, Appalachia, Va., on the morning of November 27th, from a sudden stroke of apoplexy, at the age of 36,

RESOLVED, That this Society desires to place on record its deepest sorrow for the loss it has sustained, and be it further

RESOLVED, That these resolutions be spread upon the minutes, published in his home paper, and the *Virginia Medical Monthly*, and that a copy be forwarded to his bereaved wife and mother, to whom we tender our most profound sympathy.

C. B. BOWYER,
R. W. HOLLEY,
J. H. HAGY,
Committee.

Dr. Harry C. Cline,

Of Front Royal, Va., died September 29, of pernicious anemia, at the University of Virginia Hospital. He was born in Front Royal, November 16, 1844, and, after completing his academic education there and at Roanoke College, he studied medicine at the University of Maryland, from which he graduated in 1876. He had been a member of the Medical Society of Virginia since 1889.

Dr. Massie L. McCue,

Of Greenwood, Va., died November 15, at the age of 74 years, death being due to apoplexy. He was graduated from the University of Virginia Medical School in 1873 and had practiced his profession in Albemarle County until about ten years ago when he was forced to retire on account of failing health. He was widely known as a fruit grower and was for many years president of the Virginia Horticultural Society. He is survived by his wife and a son.

Dr. Frank Aikman Jones,

A widely known diagnostician of Memphis, Tenn., and an ex-president of the Southern Medical Association, died at his home in that city, November 23. Dr. Jones was 55 years of age and studied medicine at Louisville Medical College, from which he graduated in 1890. He was one of the organizers of the Southern Medical Association and always one of its most active workers.

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 10.
WHOLE No. 847

RICHMOND, VA., JANUARY, 1923.

20 CENTS A COPY
$2.00 A YEAR

Original Communications

FOCAL INFECTION IN CHRONIC AND RECURRING DISEASE.*

By CHARLES H. MAYO, M. D., Rochester, Minnesota.

I am pleased to attend the meeting of the Medical Society of the State of Virginia, especially since this state has long served as a center for the advancement of truth throughout our country as spread by your citizens. For discussion I have chosen the subject: Focal Infection in Chronic and Recurring Disease.

The spread of infectious disease from a single focus was recognized long before the specific microbe; in fact the bacterial agent is not yet recognized in several such diseases. Yet, judging by what has been accomplished in other diseases, it is but a question of time until more will be known of their etiology.

There have been isolated as yet less than 600 kinds of bacteria and it is of the greatest interest to note how work is carried on in the study of diseases of animals and of plants as well as of persons. The study of insects as carriers of disease was first an economic problem, in that cattle ticks were discovered to be the carriers of the infection of cattle fever; later the mosquito was found to be the similar carrying agent in yellow fever and malaria.

Recently our agricultural departments have shown that the microbic life causing black rust in wheat is carried through the winter on the wild barberry plant, from which it is distributed in the spring as a real focus of infective disease. Recent advances in the study of recurring and chronic diseases, so resistant to local treatment, are but the revival of appreciation of the cure of such cases by the removal of infected teeth or tonsils. Such cures were obtained by Hippocrates in 400 B. C., and by Benjamin Rush in 1800. The theory was revived by Billings twenty years ago, and supported and advanced by Rosenow.

The study of the causes of disease is most interesting. I say "causes" rather than "cause", for the bacterial germ must fall on suitable soil and have a favorable environment in order to be successful in carrying on its life work, the production of special disease. Hence, several factors must be considered in this study.

That certain drugs are elective in action has long been recognized; thus, digitalis is elective for the heart muscle, and belladonna is elective for circular muscle fibers. That bacteria in infectious disease cause a definite syndrome of disease in each person infected is accepted. To show that certain forms of bacteria are as sensitive in their selection as are certain drugs, for instance, we have but to consider those which stop in the circulation, should they pass by the transformers of energy, the ganglion cells of the anterior horns of the spinal cord, and develop changes, such as inflammation, edema, and finally varying degrees of local destruction whose effects we recognize as poliomyelitis.

Rosenow long since showed the development of certain ulcers of the stomach and duodenum to be the result of a specific localization of bacteria. He cultivated bacteria from such tissues in an active state removed from the human, injected them into the blood or peritoneum of animals and found them to be elective for similar tissue with like results. Internists have admitted such elective action in the development of ulcers, but have considered the cause of the ulcers unproved inasmuch as they usually heal later, although the internists also claim with truth, to be able to heal the majority of ulcers in the human stomach by treatment. It is true that the tendency of ulcer produced in the duodenum

*Presented by invitation before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

of the dog is to heal, because he lacks the human equation, a focus of disease which would continue to deliver the causative bacteria to the blood from time to time, thus relighting the dormant ulcer and producing the recurrent disease, so familiar in man.

Diseases of the appendix can be produced by elective action of bacteria. The bacteria which live in the tissues of the appendix (not those normal to its lumen) are probably rarely the cause of lower abdominal disease, but should be considered as a possible agent in causing chronic diseases of the upper abdomen. The tonsils are similarly subject to their own active diseases and from small infected sealed areas may be the focus of specific bacteria which account for many widely varied local diseases. The tonsils are usually graded from size and appearance on a scale of one to four. Those designated three and four, the largest, are seen more often in young persons; the enlargement should be regarded as a reaction to local disease, but is rarely the cause of a distant lesion. The small imbedded tonsil, which does not show inflammation, but from which pus may occasionally be pressed from an open crypt, is more dangerous as a focal agent.

The alveolar abscess at the root apex of a painless, because dead tooth, is particularly dangerous, as there is seldom redness of the soft tissue to arouse suspicion, and the condition can only be revealed by the roentgen ray. Electric response is of value in testing vitality. Recently there has been a reaction against the idea of focal infection, and this has been supported by a failure to cure certain cases of chronic disease. Often those who have failed to effect a cure after extensive removal of teeth or tonsils attribute the unsatisfactory result to incorrectness of the principle, whereas it is really due to erroneous diagnosis, and their failure to locate the true focus.

Of the greatest value in research has been the work of Meisser and Bumpus who have created in the dog the condition so commonly found in man, a root abscess as a focus to maintain chronic disease. That this would ultimately be accomplished I predicted in a paper read before the Southern Surgical Association in New Orleans in 1919, in which I stated that the development of stone in the kidney is bacterial in origin and construction. This claim I had previously made, but with some misgivings, in discussing stone development. It was extremely satisfactory that the ultimate success of this research proved the truth of the statement which was based on analogy and theory.

It may be of interest to present some of the corroborative findings of Rosenow and Meisser.

During the course of numerous experiments on the localization of bacteria from various diseases, they had noted instances of extremely specific effects. Some of these observations suggested that certain chronic diseases, not generally believed to be due to infection, might be reproduced if a more or less continuous supply of bacteria could be furnished through a focus of infection, and if the elective localizing power and the property to incite certain specific reactions could be maintained; two requirements which are difficult to fulfil when bacteria are grown on artificial mediums. Acting on these ideas Rosenow and Meisser performed a series of experiments in which the pulps of teeth in dogs were removed and the pulp chambers infected with freshly isolated bacteria from various diseases.

The dogs selected were active and well nourished. Catheterized specimens of urine were normal, and roentgenograms of the kidneys, ureter, and bladder were negative at the beginning of the experiments. While devitalizing and infecting the teeth the animals were covered with a sterile sheet, and kept under ether anesthesia by the intratracheal method. A rubber dam was used to isolate the teeth to be worked on. The teeth were scrubbed and sterilized with alcohol and tincture of iodine, then cut off with sterile bone nippers midway between the incisal edge and the gum margin. The pulp canal was drilled into with sterile dental drills. The pulps were removed with sterile broaches and, after the hemorrhage had ceased, the bacteria, in dense suspension, were introduced into the pulp chambers with fine capillary glass pipettes. The canals were then sealed with impervious dental cement or amalgam. In most instances three cuspids were infected; in a few, only the two lower cuspids, and in order to determine whether the streptococci from these artificially produced foci, or bacteria from other sources might localize and produce periapical infection around teeth from which the pulp

had been removed, the fourth cuspid was devitalized, but not infected. The animals were numbered and weighed; they were kept under hygienic conditions and fed a balanced ration of dog biscuit, occasionally supplemented by meat. A supply of water, rich in lime salts, was constantly before them. Catheterized specimens of urine were examined at intervals. In from fifty-one to 120 days after the infection of the teeth, one kidney was removed from each dog. This afforded opportunity at necropsy some time later to compare the findings in that kidney with those of the remaining kidney. The study included nine cases of nephrolithiasis seen in the Clinic.

Owing to the numerous instances of beneficial effects in other diseases from removal of foci of infection and to the results obtained in the first case, the tonsils were removed and infected teeth extracted in the other patients studied. The extracted teeth and extirpated tonsils afforded an opportunity to obtain proper cultures for experimental studies.

All of the patients studied were men. Their ages ranged from thirty-three to sixty years. All were suffering from nephrolithiasis, had had typical renal attacks of from three to twenty years' duration, and the interval from the last attack to the time of our study ranged from two weeks to nine months. A history of acute infection which appeared to be a factor in the genesis of the urinary symptoms was obtained from three of the patients. Cultures were made from the urine of five of the patients. In three of these streptococci, usually with staphylococci and *Bacillus coli*, were isolated. Foci of infection were found in the teeth or tonsils of all. The number of pulpless teeth showing periapical infection varied from one to seven in each patient. Most of the infected teeth had been rendered pulpless many years prior to our study. The teeth of dogs were infected with the cultures from teeth, tonsils, and urine of one patient, from teeth and tonsils of two, from infected teeth only of four, and from tonsils only of two.

Twenty of the thirty-four dogs used in the experiment developed calculi and other lesions in the urinary tract, readily visible at necropsy. Twenty-six (75 per cent.) revealed microscopic calculi in the medulla of the kidney, and twenty, localized areas of active cellular infiltration in the medulla. Thirty (87 per cent.) revealed either calculi or localized lesions in the medulla, or both. Streptococci or diplococci were demonstrated in, or adjacent to, lesions in the kidney in sixteen dogs, all of which showed active focal lesions on microscopic examination. Positive results were obtained in eight of the nine cases. In the negative case the teeth of only one dog were infected.

The duration of the experiments yielding positive results was one month in two of the dogs, two to three months in eight, three to six months in twelve, seven to eight months in six, and ten months in two. The duration of the four negative experiments was only eleven, fifteen, thirty, and forty-five days respectively because of death from distemper.

The number of dogs whose teeth were infected with cultures from the patients varied from one to twelve in each case. In two cases only one dog was used; in three, two dogs; in two, four dogs; in one, six dogs; and in one, twelve dogs. The teeth of eighteen dogs were inoculated with cultures obtained from infected teeth, six with cultures from tonsils, and ten with cultures from the urine. Twenty of the dogs were anesthetized and fourteen died of intercurrent infection, or as the result of the induced focal infection.

The streptococcus inoculated into the pulp canals was isolated from the infected material in the root canals, or the periapical tissues of the pulpless teeth, at the end of each experiment. This was true alike of the three cuspids which were devitalized and infected at the beginning of the experiment and of the cuspid which was devitalized but not infected. In some instances secondary infection by a small gram-negative bacillus, and more rarely by a staphylococcus, had occurred. The streptococci in the teeth in which secondary infection had not occurred were especially numerous at the periphery of well-formed granulomas and where the bone was being absorbed. The findings around the teeth were similar to those following the devitalization of teeth in persons, as practiced in dentistry; the infected teeth became discolored, but remained firmly in place in the alveolar sockets; the infection caused rarefaction and absorption of bone in the periapical region without swelling, pain, or tenderness, and the cellular infiltration and distribution of the bacteria of

well-formed granulomas were also similar. The experimentally produced chronic foci, aside from being the source of the streptococcus which tended to localize electively in the urinary tract, appeared to have a general deleterious effect. Some of the dogs lost markedly in weight and became more susceptible to intercurrent infection. This was particularly true in those in which unusually large areas of infection around the teeth had developed and in which the renal calculi were large. This finding supports the interpretation by Osborne and Mendel of the infectious origin of urinary calculi observed in rats (eighty-one of 857) fed on a diet deficient in fat soluble vitamins.

It is not clear why the four dogs infected with the arthritis streptococci failed to develop arthritis. Active infection around the teeth was found in all. The streptococcus from the pulp chamber in one of the dogs inoculated four months previously had retained its affinity for the joints of rabbits on intravenous injection. It would seem, therefore, that the joints of these dogs were not affected because of high resistance of these structures to invasion by this organism during the relatively short duration of the experiment, and not because of their encapsulation, or loss of specific localizing power.

Calculi or lesions of the medulla were produced in eighty-seven per cent. of the dogs whose teeth were infected with streptococci from the urine, infected teeth, and tonsils of nine patients with typical nephrolithiasis. The duration of the experiment on the dogs in which the findings were negative was too short for stones to form. This is in sharp contrast to the findings in an equal number of dogs whose teeth were infected with strains from other sources, and to those of a larger series kept under the same conditions, but in which the teeth were not infected.

The experimentally produced calculi were similar in physical properties and chemical composition to those found in nephrolithiasis in man. The number and size of the stones were often proportional to the duration of the experiment. The other findings in the urinary tract were also similar to those occurring in patients with this disease.

If albumin, pus and blood were present in the urine, there were only small amounts; and the lesions in the medulla of the kidneys were relatively slight unless ureteral obstruction from an impacted calculus occurred, when marked ascending infection developed just as it commonly does in patients with partial obstruction of the ureter and as produced experimentally in dogs by Keith and Snowden.

The streptococcus inoculated into the teeth of dogs was isolated from the kidneys, from some of the stones, and from the teeth, at the end of the experiments, and its elective affinity for the urinary tract in rabbits was demonstrated on intravenous injection. The streptococcus from the teeth of dogs that showed active lesions in the kidneys had retained specific affinity for the kidneys of rabbits, while those from the dogs that showed no lesions or only healed lesions had lost this peculiar localizing power. The organism was found in the lesions in the substance of the kidney where crystallization and stone formation were beginning.

The results of the experiments by Rosenow and Meisser, and of the clinical study by Keyser and Braasch, and others, indicate that the factor of focal and other infections should be given thorough consideration in the management of cases of nephrolithiasis. And may not a stone-forming infection account in part for the unusual prevalence of this condition in certain localities? The demonstration of the presence of the microörganisms, precisely where precipitation and crystallization begin, suggests strongly that the mechanism of the production of stone is largely a local process and that the reactions incited produce the physicochemical conditions necessary, such as the nucleus and organic framework, for the formation of calculi. The common occurrence, however, of unusually large numbers of calcium oxalate and other crystals in the urine and in the medulla of the kidneys of the dogs that developed calculi, and the loss in weight, suggests that more general effects of infection may also play a part.

The conclusion that primary urinary calculi are often due to streptococci which have elective affinity for the urinary tract, and, it would seem, specific power to incite the conditions necessary for their formation seems justified.

THE TUBERCULOSIS PROBLEM AND THE NEGRO.*

By H. R. M. LANDIS, M. D., Philadelphia, Pa.

Among the serious problems facing us today is that of the Negro. His social, economic, and political status has been debated pro and con for some years. Relatively little attention, however, has been devoted to his physical well being. Those interested in the broad subject of public health have viewed with considerable apprehension, however, the great prevalence in this race of the venereal diseases and the alarmingly high death rate from tuberculosis.

In the North especially there is an indifference to the subject. Many people have no realization that our Northern Cities have a Negro problem. This seems strange in view of the fact that many of our Northern cities contain an enormous number of Negroes.

The dissemination of the Negro population throughout the country has been pointed out in a recent article in the *Literary Digest* (February 25, 1922). Judge A. S. Van de Greaff, of Alabama, states that the Negroes are migrating northward and westward in large numbers. Indeed, their migration is so large and so steady that we can almost certainly look forward to the day when there will be no more "black counties" in the Gulf States.

The following statistical analysis of the Negro population is significant. There are today more Negroes in Cincinnati than in Louisville; more in the border states of the North than in the border states of the South. "On the Southern side there has been a steady decline, at first only relative, but later absolute, until in Kentucky there are now fewer Negroes than in 1860, and the black percentage of its population has become less than that for the United States as a whole; until also, as is even more significant, the last census has shown the loss of black population in all the four contiguous subjacent states,—Tennessee, Alabama, Mississippi and Louisiana. This radical change of trend—this decisive turn toward uniformity in the redistribution of the Negroes between North and South under the conditions of freedom, is thus shown to have already operated over wide areas, and it is now being extended over the whole country. From the returns of the census of 1920 we find in the Northern group 1,236,000 Negroes, showing a decimal gain of 380,000 or 44 per cent.; and in the Southern 1,917,000, showing a gain of 26,000 or less than 1½ per cent. And if we again extend the comparison back to 1860, as the beginning of the new dispensation, we have in the Northern area an increase of 1,002,000 Negroes or 448 per cent., against one of 538,000 or 60 per cent. only, in the Southern."

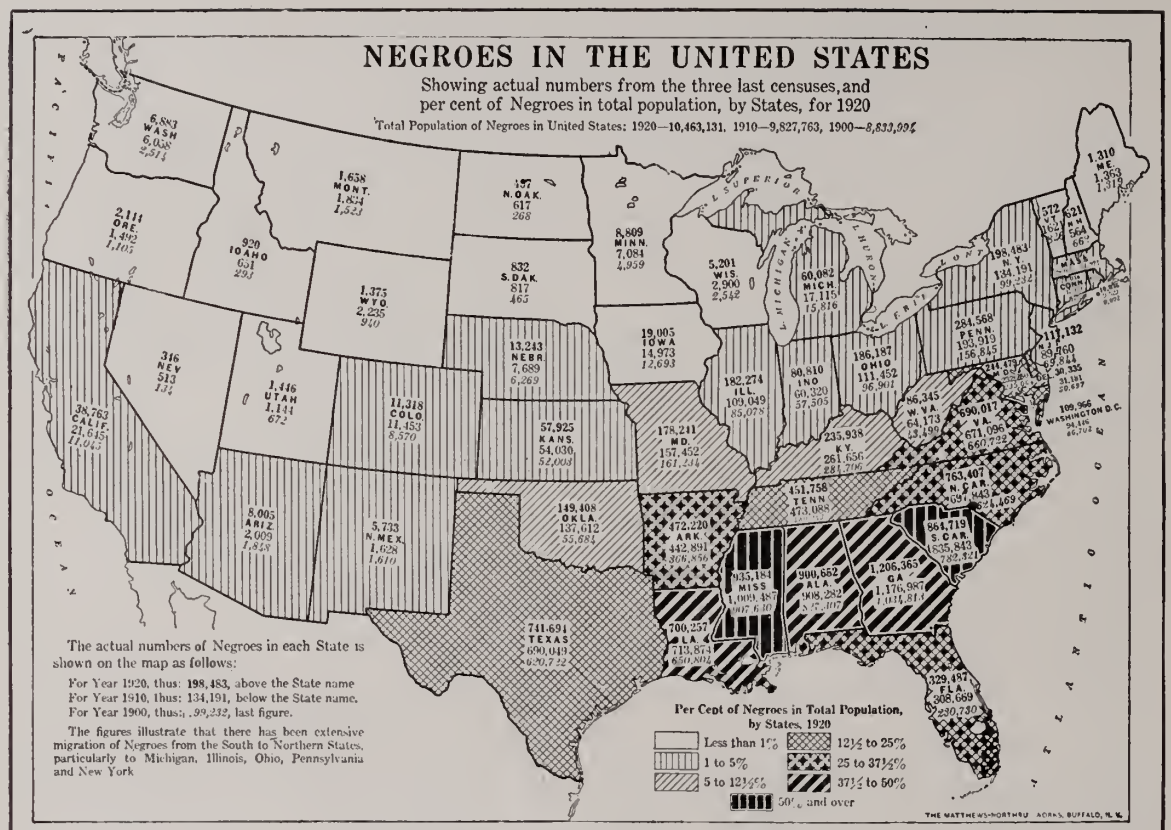
The census of 1920 shows that there were 10,463,131 Negroes in the country at large; in 1910 there were 9,827,763; and in 1900, 8,833,-944.

The appended map (Fig. 1) shows at a glance the distribution of this race. It is interesting to note that in 1896 Frederick L. Hoffman published a study entitled "Race Traits and Tendencies of the American Negro." He summarizes the chapter devoted to the various diseases to which the Negro is liable as follows: "The general conclusion is that the Negro is subject to a higher mortality at all ages, but especially so at the early age periods. This is largely the result of an inordinate mortality from constitutional and respiratory diseases. Moreover, the mortality from these diseases is on the increase among the colored, and on the decrease among the whites. *In consequence, the natural increase in the colored population will be less from decade to decade, and in the end a decrease must take place.** It is sufficient to know that in the struggle for race supremacy the black race is not holding its own; and this fact once recognized, all danger from a possible numerical supremacy of the race vanishes. *Its extreme liability to consumption alone would suffice to seal its fate as a race.** That alone would suffice to make impossible numerical supremacy in the Southern States. 'Sufferers from phthisis,' writes Mr. Haycraft, 'are prone to other diseases such as pulmonary and bronchial attacks, so that over and above the vulnerability to the one form of microbe, they are to be looked upon as unsuited not only for the battle of life but especially for parentage and for the multiplications of the condition for which they themselves suffer.' "

In spite of this pessimistic opinion, a study of the map already referred to shows the great increase in the Northern and Western States

*Read by invitation before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

*Italics are mine.



STATES LOSING AND GAINING NEGRO POPULATION.

Several Southern States show losses, while some Northern manufacturing States show large gains

and in spite of the migration from the Southern States, many of them show an increase in 1920 over that of 1910.

Pennsylvania leads all states other than the Southern, in the size of its Negro population. There are probably several reasons for this: (1) The large Quaker population with its anti-slavery views early led to the settlement of Negroes in the state; (2) Philadelphia, with an estimated Negro population of 150,000 is the first large city encountered on the way North; (3) the multiplicity of industrial plants in the state offers a ready field for employment.

The following extract is made from the Report of Dr. M. P. Horwood who made a survey of the tuberculosis situation in Philadelphia during the past summer:

That Philadelphia is confronted with a serious Negro problem from the standpoint of tuberculosis and the general public health is evident from the following table:

SHOWING THE COMPOSITION OF THE POPULATION OF SEVEN LARGE CITIES IN THE UNITED STATES IN 1920, WITH PARTICULAR REFERENCE TO THE NEGRO COMPONENT.

City	Total Population	Negroes	Per cent. Negroes
Philadelphia	1,823,779	134,229	7.4
New York City	5,620,048	152,467	2.7
Chicago	2,701,705	109,458	4.1
Detroit	993,678	40,838	4.1
Cleveland	796,841	34,451	4.3
Boston	748,060	16,350	2.2
Baltimore	753,826	108,322	14.8
U. S.	105,710,620	10,463,131	9.9

An analysis of the 1920 Federal Census figures for the population of seven of the largest cities in the United States shows that in only one other city, namely New York, is the Negro population greater than that of Philadelphia. The number of Negroes in Philadelphia would in themselves make a large city. When the percentage of Negroes to the total population is considered, however, it is found that the concentration of Negroes in Philadelphia is 2.7 times that of New York, so that in reality the Negro problem is much more acute in

Philadelphia. The Negro population of Philadelphia is greater than that in any of the other cities considered in this study including Baltimore, which is generally known as having a large colored population. Of the seven cities whose statistics were analyzed Baltimore alone had a higher concentration of Negroes.

It is also interesting to note that the concentration of Negroes in Philadelphia is almost as great as that found in the entire country. It is indeed unusual to find a northern city with such a distinctly Negro problem. The number of Negroes in Philadelphia was largely increased during the war by migration from the South, in order to fill the numerous vacancies in industry which occurred at that time. That the prevalence of a large Negro population in Philadelphia has materially increased the tuberculosis death rate will be demonstrated more specifically in the analysis of the mortality rates from tuberculosis by color, and by wards. It will be observed that the death rate from tuberculosis among Negroes in Philadelphia is considerably higher than that among the whites, and that most of the wards having a large concentration of Negroes, also show highly mortality rates from tuberculosis.

The same state of affairs is shown in New York City with an estimated Negro population of 168,000.

In 1910 the mortality rate per 100,000 inhabitants was 202 among the white and 617 in the colored population. Both rates, of course, have declined markedly since that time —in fact, have been reduced 52 per cent., or more than one-half—being, respectively in 1921, 97 among the white and 299 among the colored.

It is interesting to note that the decline of 52 per cent. since 1910 in the tuberculosis death rate has been the same for both the colored and the white populations. This well illustrates how important are general conditions—either economic, sanitary or the availability of food supplies—in effecting the development or the reduction of tuberculosis among all classes of citizens. The equal sanitary supervision of all classes of tuberculosis by public health authorities, and the general educational measures, have produced a rate of improvement among the colored equal to that among the remainder of the population, though naturally starting from and remaining at different levels. (*Bulletin of the New York Tuberculosis Association*, Sept. 1922, Vol. III., No. 4, p. 11.)

As has already been stated, the Negro problem socially, economically, and from the viewpoint of public health, has ceased to be a matter of interest to a limited portion of the country; it has, and is, yearly becoming more so, a national problem.

So far as public health measures are concerned, they must be inefficient if the health problems of this race are disregarded.

Those imbued with bitter racial antagonism are equally concerned with those who have a sincere desire to elevate these people. Two outstanding facts must be considered: (1) That in the city of Philadelphia for the year 1921 the death rate from tuberculosis among the Negro population was 299 per 100,000 as against 99.5 per 100,000 among the white population; (2) that syphilis, as indicated by the Wassermann reaction, is about 6 times as frequent among the Negroes as among the Whites. These figures can be duplicated and, in many instances, increased in other communities where the Negro population is large.

It is obvious, therefore, that a large field is open for effective antituberculosis work among Negros, for there is no reason to believe that the tuberculosis mortality rate need be so much higher among them than among the whites. It should be possible to bring the curves of the tuberculosis mortality rates for both groups much closer together than they are at present. This is borne out by the fact that twenty-five years ago the Negro mortality rate was much higher than at present and that during this period there has been a steady decline.

When one considers that this race furnishes large numbers of the servants in our homes, as cooks, nurses, maids, laundresses, etc., it would seem that some effort would be made to reduce the incidence of both infections.

Tuberculosis in the Negro is an interesting chapter in the etiology of this disease.

The history of the Negro in the United States dates back to August 1619 when a Dutch ship entered the James River and landed a cargo of slaves in the colony of Virginia. (Matas)—"Thus at Jamestown, twelve years from the settlement of the colony of Virginia and one year before the Pilgrim Fathers had touched the new world, began

that system in the British Continental Colonies, which under the fostering care of England, overspread the land. During the years from 1619 to the opening of the American Revolution, 1776, more than 3,000,000 African bondsmen were imported into the thirteen British Colonies."

In 1865, at the close of the Civil War, the slave population had increased to 4,000,000, and now, 1922, or three centuries after their first introduction to this country, the Negro population has increased to 10,463,131.

Among the early importations many diseases, notably yaws, elephantiasis, sleeping sickness, etc., were introduced but, owing to unsuitable climatic conditions these infections gradually died out and eventually became rarities.

The existence of tuberculosis among the original African and, indeed, among the slaves in the anti-bellum period was practically unknown. If one goes over the medical journals published during the first half of the 19th century, an occasional article will be encountered reporting "an undoubted case of consumption in a Negro." Furthermore, the rarity of the disease is almost universally attested to by those practicing in the South during that period. "To the question propounded to Dr. Cartwright in 1859: 'Is not phthisis very common among slaves of the Southern States and unknown among the native Africans at home?' he replied: 'That phthisis so far from being common among the slaves of the slave states, is very seldom met with'." (Matas.)

This is in accordance with accepted facts regarding the etiology of tuberculosis, namely, that the disease is unknown among the savage and primitive peoples and that the appearance of tuberculosis among them is coincident with their first contact with civilized whites.

The original African slaves, therefore, may be assumed to have been free from tuberculosis. That they remained so for the two hundred and forty-four years of slavery may be ascribed to the following facts: (1) They lived in agricultural communities and hardly at all in large centres of population; (2) reports to the contrary, they were almost universally well housed, well fed and safe guarded, in so far as possible from illness. The last consideration would be dictated by policy if not by sentiment as they represented property and extremely valuable property at that.

So far as one can learn, therefore, following the Emancipation Proclamation, the Negro population, which for the most part lived on the plantations drifted into the nearest city or town. Without resources and with little or no experience in fending for themselves it was inevitable that they should crowd into the poorest and most unsanitary quarters; likewise they were not efficiently fed; and finally, and more important, they were brought into contact with the two diseases which have since exacted such a heavy toll of lives, namely, tuberculosis and venereal infection.

In so far as tuberculosis was concerned the drama was that which has been enacted in so many other races. The implantation of the tubercle bacillus in virgin soil, no tolerance such as occurs in races exposed for centuries to the disease and, as a consequence, rapidity of the spread of the disease from individual to individual.

The ultimate result of the factors just cited has been to cause a tremendous morbidity and mortality rate due to tuberculosis.

As has been stated above it was the opinion of many that the inroads from tuberculosis alone would ultimately, and at no distant time, destroy the race. Time has shown this opinion to be fallacious. In spite of the high mortality rate from tuberculosis the Negroes continue to increase in numbers, and while there has been a decline in the death rate it is still abnormally high. Tuberculosis continues to be a serious problem with them and because of their association with the whites no less a menace to the latter.

There can be scarcely any difference of opinion as to the far reaching effects of the modern crusade against tuberculosis. It is the first great effort directed towards the control of a universal disease; and, while in the beginning the sole object of the movement was to cause the disappearance of that disease, it has gradually broadened its scope until directly or indirectly most of the problems relating to public health are influenced.

In spite of the long duration and the intensiveness of the propaganda against tuberculosis, it is interesting to note that it has been, for the most part, effective only among the whites. The influence it exerted on the Negro population has been almost nil. The reasons for this are probably to be ascribed to the following facts: (1) No special meet-

ings were held to directly interest them; (2) little of the literature on the subject appearing in the daily papers or the magazines was read by them; (3) their aversion to going to dispensaries and hospitals; (4) and in my opinion the most important, the inability of the white nurses to influence them.

Whether these reasons are correct or not, the fact remains that in spite of the high incidence of the disease among them, institutions devoted to the care of tuberculous patients had relatively few Negroes and the few who visited the dispnsaries paid but one or two visits and then ceased coming.

The Henry Phipps Institute of Philadelphia has always been located in the midst of one of the largest of the Negro settlements in Philadelphia. For the first ten years very few Negro patients came to the dispensary and those few rarely paid more than two or three subsequent visits. Most of the Negro patients we treated were those admitted to the Wards of the Hospital in a dying condition. A recent survey we made of the Negro situation in Philadelphia confirmed this in regard to other institutions having a large Negro population in their immediate neighborhood, namely, that after the initial call they rarely paid many subsequent visits.

This state of affairs began to interest us as far back as 1912. At that time the writer became associated with the Whittier Center, an organization having as its object the promotion of the health of the Negroes of Philadelphia. It was felt that something should be done towards attacking this problem and that something different was needed as the methods which had proved successful with the White population had failed.

It seemed to us that it was worth trying the experiment of carrying on an educational campaign among them through the medium of a colored nurse. This experiment began on February 1st, 1914. The following table shows clearly the effect of intensive work among them:

Mostly Ward Patients.		Colored Nurse Began Work.	
1904	47		
1905	28	1914	121
1906	76	1915	117
1907	57	1916	141
1908	49	1917	142
1909	67	1918	140
1910	37	1919	190
1911	48	1920	245
1912	45	1921	400
1913	57	1922 (8 months)	475

In July 1914, two additional nurses were furnished. At this time a special clinic was established at the Phipps Institute and was placed in charge of a capable colored physician, Dr. Henry Minton.

In 1920 the Philadelphia Health Council became interested in the venture and through its aid three additional colored nurses and two colored physicians were assigned to the Institute. At present we have a force of six nurses and three physicians working among the colored population. In addition the Jefferson Hospital for Diseases of the Chest has one colored physician and one nurse.

Recently, we have established a subdispensary in another district and are about to place a second one in still another area.

In addition to its specific problem of dealing with tuberculosis the Phipps Institute conducts a prenatal and postnatal clinic and a syphilis clinic.

Our experience with the Negro in these special clinics was similar to that in the tuberculosis dispensary, namely, few patients belonging to that race, so long as they were handled by white nurses.

The following tables show the growth of these special Negro clinics as soon as a colored worker was placed in charge:

Prenatal Clinic.

1921—New Cases	28
1922—New Cases from February 1st to date	50

Prophylactic Clinic.

1921—New Cases	83
1922—New Cases from February 1st to date	91

Syphilis Clinic.

1921—New Cases	133
1922—New Cases from February 1st to date	77

A year ago we arranged to take each one of the graduating class of the Mercy Hospital (a Negro Institution) for a period of two months. While the time is short it gives these nurses some idea of the tuberculosis and public health problems.

It is interesting to note that the first nurse taking this course was sent to Wilmington, Delaware, to take charge of a Negro tuberculosis dispensary which had been a failure. As a result of her energy the attendance at this dispensary was tripled in two months and the dispensary days increased from one to three.

To further substantiate this there is the ex-

perience of the Jefferson Hospital for Diseases of the Chest. During the first six months of 1921 when the Hospital had only a part time colored nurse, who came to the Clinic once a week, thirty-nine (39) new patients visited the dispensary. During the second half of the year 1921, a full time colored nurse was placed in charge of the work and the number of new Negro patients who came to the clinic during this period was ninety-six (96) or nearly three times as many colored patients as were added to the roll the first half of the year.

Taking all these experiences into consideration, this deduction would seem warranted: That those Institutions that make use of Negro doctors and nurses for the care of patients of the same race are, from the standpoint of number of patients and regularity of their attendance, most successful in the treatment of Negro patients.

In a previous article on this subject the situation was summarized as follows:

As the matter stands at present, there is operating at the Phipps Institute a clinic held by and for Negroes (with expert white guidance and supervision) which is doing health work on the most modern lines and with a degree of competency which compares favorably with that of the average clinic for whites of the same kind. It is the only venture of the kind in this vicinity, and we know of no other like it anywhere. The general method of approach is that followed by most successful effort in connection with the Negro (as good a quality of endeavor by the Negroes themselves as can be secured with careful, sympathetic direction and supervision by whites).

The importance of the problem may be emphasized. Philadelphia has to-day upward of 140,000 Negro residents. They are only partially segregated. As servants, they go most intimately into many homes of the whites, and are a constant source of possible infection there.

When one considers that the mortality among this race ranges from 300 to 400 per 100,000 as against 100 to 125 per 100,000 among the whites, the problem is truly appalling.

1818 *South Rittenhouse Square.*

TUBERCULOSIS IN RURAL VIRGINIA.*

By H. R. EDWARDS, M. D., Richmond, Va.
Clinician to Bureau of Tuberculosis Education, State Board of Health.

For purposes of discussion it may be more convenient to consider by parts the problem of "Tuberculosis in Rural Virginia," so I have divided my paper into three parts—the plan and purpose of our work, our statistical information, and the problem which we face.

The Plan and Purpose.

The fixed policy of the State Board of Health is to operate its bureaus so they will be valuable alike to the medical profession and to the laity. Consequently our organization seeks always to create local interest in our public health endeavors; and there is no disease that affects the general health which more definitely calls for co-operative local effort than does tuberculosis.

We estimate that there are not less than 24,000 cases of active tuberculosis in Virginia, and our State Sanatoria afford bed facilities for approximately 700 patients—which means the handling of 1,500 cases each year as the virtual maximum. It must then be evident that additional facilities are demanded if we would save our consumptives and protect those who otherwise would be subject to infection.

The local practitioner is handicapped. If he too strongly urges treatment either at home or at a Sanatorium, his patient is just as apt as not to leave the conscientious physician and go to one who takes his responsibility less seriously. He is handicapped in another way. Ignorance among the laity tells why so few incipient cases reach the doctors. So we have to consider ways of overcoming both these obstacles: we must urge the doctors to urge the treatment even at the risk of losing some of their practice, and we must instruct the people generally so they will realize their dangers early enough to conquer them.

These objects are so interrelated that we must consider them together rather than as separate undertakings. Our bureau strives to reach every definitely active, every suspected, every contact case in rural Virginia. This is an ambitious plan which may never be realized in its entirety; but we are going pertinaciously toward its accomplishment, even if that accomplishment be partial.

*Read by invitation before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

I may say incidentally right here and then dismiss this particular phase of the subject, that we do all in our power to stimulate general public health activities, full time health organizations for counties, sanitary officers or visiting nurses where local funds are not available for the larger undertaking, health associations among the adults of the communities, and health leagues for the children. This effort on our part is not inspired merely by loyalty to the general organization but every tuberculosis worker knows that as the general health improves the tuberculosis menace is mitigated.

Specifically, our work may be divided into two sections—propaganda and clinics. We use the former to create interest in the latter and to continue an intelligent interest in the tuberculosis problem after the clinic shall have been concluded. Our propaganda work is strictly educational. We use motion pictures, lectures and newspaper articles; and to create timely interest in a coming clinic we use dodgers and posters throughout the territory to be covered. Our lectures are, whenever possible, delivered in some vicinity church, on the Sunday preceding the clinic.

The function of the clinic is to make such a thorough physical examination as will enable an exact diagnosis. I regret to say that this object is not always to be accomplished. Symptoms simulating tuberculosis sometimes lead to definite suspicions but we have not the time for such complete diagnosis as will yield even a relative certainty. For such cases our only procedure is to advise the suspect that he place himself under the care of a local physician for further observation and study. Positive cases and contact cases are encouraged to undergo regular periodic examination. To all cases, active, arrested, suspicious or contact, State and National bulletins dealing with tuberculosis are sent.

I cannot too strongly state my belief in frankness when dealing with a case of tuberculosis. I do not believe that anything can be gained by dissimulation. It may sometimes be pardoned if the clinician does not tell the hopeless case just how impossible for him is any hope of recovery; but in all other instances I believe that frankness is the best, as it certainly is the most honest, of courses.

Wherever we hold clinics, we cordially invite all local physicians to attend; but the busy life of the average country doctor and the large territory which he has to cover make it difficult for him to spare the time demanded, so we do not have as large an attendance of the profession as we would wish; but we do have the moral support of the medical men I believe, almost without exception.

The non-attendance of the local doctors makes it necessary for us to take and furnish a record for each case. These records with our recommendations are forwarded to the family physician, if there be a regular one for the patient; and if the patient who has not a regular physician takes our advice and goes to a doctor, the record is available for the adviser.

Our nurse usually remains in the local field for the two weeks following the clinic. She visits positive, suspicious, or contact cases disclosed by the clinic and homes where there has been positive tuberculosis. She gives specific advice to the clinic cases and urges general sanitary improvements and habits of health and hygiene. These visits are not only definitely helpful to the known cases but they result in our discovering cases and contacts that would have otherwise remained unknown to us.

In each county we leave a record of all positive or suspicious cases. Our findings and recommendations accompany the record. With such a record, it is easy for the local health organization, whether voluntary or official, to follow up the cases: and follow-up is the most important phase of the work. When a man first knows that he has tuberculosis is the time to urge treatment. It takes little insistence then; but after a few weeks, especially if the disease makes no appreciable headway, the notion of treatment becomes vague. To handle this problem with relative adequacy, there should be a visiting nurse regularly employed for the county; and it is only through such an agency that the clinics can be made really effective, for some of the worst cases and the most dangerous sources of infection live in places that are inaccessible to the ordinary journeyer; and it needs the nurse to rout them out.

Parenthetically, I may say here that unless they are accompanied by adults somewhat acquainted with their histories, we avoid taking children for chest examinations. In childhood a pulmonary lesion is rare; but when we

do find one it usually has advanced considerably. What so many children need is preventorium treatment. Physical examination usually reveals infected tonsils, decayed teeth and cervical adenitis which may or may not be tuberculous in character. Tonsillectomy, dental work, proper diet and fresh air would go far toward curing most of the defects that give the impression of tuberculosis. Undernourishment is not for the most part the result of insufficient food but of improper food. It is surprising how many children do not drink milk; and they are almost invariably underweight.

Up to the present time, for the current year, we have held clinics in 26 counties in all parts of the state. We shall probably have visited 32 counties before the year is over—virtually one-third of all Virginia. One of the counties was visited twice. Such a number of counties could not have been visited and so many clinics held had it not been for the valuable aid rendered by the physicians at the State Sanatoria, to whom our bureau owes a debt of gratitude.

Statistical Information.

Appreciating that early diagnosis of tuberculosis is largely dependent upon the symptom record, we endeavor to obtain as accurate a record as possible of each case. If we had the time for the taking of more detailed histories, I feel sure that some remarkable studies in heredity and predisposition might be made. Our records have been mainly concerned with histories referable to tuberculosis or other pulmonary trouble.

We do take a sort of social history, getting pertinent facts concerning housing and living conditions; but it is very difficult to get exact information on these subjects without personal visitation; and, since that has been impossible, I am including no definite findings on these topics. We may, however, safely say sanitation is not adequate in the majority of homes and that only a minority observe proper precautions regarding a sufficiency of fresh air, particularly while sleeping. It is interesting, however, to get reports concerning sleeping porches that are built after our clinics have been held and to learn also about subsequent improvements in living conditions.

In the family history of tuberculosis we try to note the members who have had tuberculosis, the character of the patient's contact with such as have had the disease or still have it, the duration of such a contact. We get a history of acute exanthemata or other troubles usually preceding or associating with tuberculosis. We record the particular history as to time, location of involvement and subsequent complications of pneumonia and pleurisy. We note hemoptysis, the dates and amounts, if followed by streaks and fever.

The present history includes all concise information on these subjects; loss of weight, cough, expectoration, afternoon fever, pains in chest, loss of appetite, gastric disturbances, fatigue, frequency of colds, hemoptysis, night sweats, pleurisy, dyspnoea, tachycardia, catarrhal conditions or other symptoms at all referable to tuberculosis or associated with it.

Physical inspection and examination of each case is made with the clothing removed to the waist line. Percussion followed by auscultation: first, on ordinary respiration to determine rate, rhythm, intensity and the ratio of inspiration to expiration; secondly, whispered pectriloquy; and, third, the expiratory cough followed by inspiration for rales. In particular instances more detailed methods of examination are used.

Ordinarily we base our diagnosis of tuberculosis entirely upon the past and present history of the patient with our interpretation of the chest examination. In the majority of cases, sputum and X-ray examinations are not practicable until after the clinic is concluded, but we sometimes have to wait for these evidences before attempting a definite diagnosis. We regard as suspicious, cases with slight physical variations such as roughened inspiration, slightly changed respiratory rate or pitch and those which may have indefinite crepitations in either apex. Suspicion intensifies when these cases afford a history of typical symptoms with no apparent cause for their occurrence. In my private practice, I would call many of these cases positive, for I believe we should be able to diagnose our cases before there is definite tissue destruction causing rales and profuse expectoration with cough; but it seems more reasonable to give the less definite diagnosis to the average local physician because he will generally agree with it while he would disagree with the positive finding. This results in keeping the case under observation.

We are using this plan of classification:

Incipient: Slight lesion, limited to a small

part of one lung or both lungs with no tubercular complications. The findings are those of slightly changed breath sounds (prolonged expiration), slight impairment of resonance with rales present, or absent, or inconstant. The symptoms are slightly constitutional in character.

Moderately advanced: Lesion may be in one lung or there may be lesions in both and it varies from intense disease in one-third of one lung to scattered disease with no cavity formation in an entire lung. No serious tuberculous complications present. Constitutional symptoms are more flexible than in the incipient cases—usually rise in temperature, loss of weight, loss of appetite gastric disturbances, etc.

Far advanced: Lesion more extensive than in the preceding. It may be in one lung with cavity formation or may extend throughout both. This class includes cases with serious tuberculous complications. Constitutional symptoms are those of definitely impaired function. These cases always have a guarded prognosis.

Active cases: Those that show definite evidence of constitutional symptoms due to toxic absorption, usually with rales somewhere within the limits of the lesion.

Quiescent cases: Those which for a period of two months have had no constitutional symptoms, with or without expectoration, and with physical findings that indicate a stationary lesion.

Apparently arrested cases: Those who for a period of six months have had no symptoms of activity and whose physical findings are those of a healed lesion. Those findings occur in infiltration or consolidation with the exception of rales. There is usually high pitched respiration with prolonged inspiration and a markedly increased whispered voice. Atelectatic rales are not included in the above.

These briefly express the details of our classification. We are not claiming for them that they are original in any way or that they are the best that could be devised; but we find that they serve our purpose fairly adequately.

Temperatures are taken at the time of the examination; but we do not regard this record as of any particular value except in cases of elevated temperature with evidence of its regular recurrence. Then we try to get a record covering several days, particularly when other indications may lead to a positive diagnosis.

Sectional statistics in Virginia will be misleading. The eastern counties are very conservative and they do not respond to our invitations as do those of the southwest. Some of the eastern counties have high tuberculosis death ratings, yet our examinations in those sections would indicate a low percentage of disease. To the contrary, in the southwest, there are large numbers of miners and lumbermen, used to having medical attention furnished free and in the habit of consulting their company doctors whenever any ailment occurs.

In the mountainous section of Virginia we find many with enlarged thyroids and a fair amount of hyperthyroidism. There is still some hookworm but definitely less than there was a few years ago. On the eastern shore and in the bay section there is more malaria; but I am inclined to think that some of the malaria histories were exaggerated—any kind of fever and chills being called malaria. Along the southern tier of counties, particularly toward the coast, the colored population is more numerous; and there we find the highest death rates for tuberculosis.

The tuberculosis problem of the negro is different from that of the white. Our examinations disclosed very few negroes with healed lesions. It would seem from our experience not only that the disease is more rife among the colored people but that it makes a more rapid advance with them. Our examinations of the definitely positive negro disclosed in practically all cases rapidly advancing lesions with few cavities. At least we did not elicit the usual cavity with high pitched respiration and markedly increased whispered pectriloquy. The findings seemed of a softer quality for the extent of the lesions than is customary among the white people. The prognosis in most of the cases with any advancement is guarded to grave.

One outstanding fact we found. We found a number of early cases; and we discovered that those who leave the rural sections and go to the cities to work most frequently return within a few years with actual disease.

In the mining sections we found that the actual miner is less subject to disease than is his family. Among the miners the disease is rare, especially if the man has been a miner all his life. This rule does not hold good for

men who had followed other occupations before entering the mines. The women marry very young and usually bear large families. This may account for part of the disparity; and it is possible that the home conditions are not as sanitary as those in the mine.

In certain sections of the State, intermarriage is so close that it may even, in some instances, be called consanguineous. In such districts we found a higher incidence of tuberculosis and a more advanced type. It would seem undeniable that the close ancestral combinations tend to increase the tendency to tuberculosis among the offspring.

The few cases of family history of tuberculosis or chest diseases that I have been able to investigate closely lead me to concur in the opinion recently offered by Govaerts (*Eugenics Record*, Cold Spring Harbor, Long Island, New York—A. R. of T. B., Vol. No 7, p. 547), "When the taint of tuberculosis is introduced by the father, a tuberculous class increases, and when by the mother a respiratory class increases."

For purposes of analysis, I have divided our cases into three types: Positive, suspicious, negative. Furthermore, we have considered white and colored separately.

Taking first the white records: of 2.518 examined, 859, or 34%, were adult males; 1,115, 44%, were adult females; 232, 9%, were male children; and 312, 13%, were female children. Of these 286, males, 33% were positive, 86, or 10%, were suspicious, and 487, or 57%, were negative. Of the adult females, 374, 33.5%, were positive; 122, or 10.5%, were suspicious, and 619, or 56%, were negative. Of the male children, 23, or 10%, were positive; 14, or 6%, were suspicious, and 195, or 84%, were negative. Of the female children, 23, or 7%, were positive; 24, or 8%, were suspicious; and 265, or 85%, were negative.

The figures for the sexes showed a marked similarity; although the women showed a slightly higher incidence both of positive and suspicious than did the males; but on the other hand, among the children, the incidence was higher among the boys.

Taking totals, we have 28% positive, 9.7% suspicious, and 72.3% negative. Of the total of 37.7% of positive and suspicious cases we found that more than one-fifth were not under the care of a physician; every one of them should have been. It must be understood in connection with these statistics that our findings do not indicate incidence in the general run of the population. Those attending our clinics were supposed to be selected cases.

Under positive family history are recorded all members of the immediate family, the paternal and maternal grandparents, the uncles and aunts; and our contact history refers to either intimate or restricted contact with any of the above or with associates. Of the positive cases, 56.6% had positive family history; and 45.6% had positive contact infection. Of the suspicious, 45% had positive family history and 36% had positive contact infection. Of the negative, 50% showed positive family history and 37.8% had been in some sort of contact with tubercular cases.

These percentage figures will indicate the high incidence of the disease. We did not class as positive those cases where the patient was unable to relate accurately the family or contact status. No doubt we would show a much higher percentage of positive history if we were to have completely accurate records.

Our records bear out the general impression that histories of measles, pertussis and influenza or similar diseases are very frequent in the records of tubercular cases. A satisfactory evidence of the value of general public health work was disclosed by our investigations along this line. We found that the adults showed a higher incidence of the preventable diseases in their childhood years, which leads to the view that our children are being relatively protected from such ailments. It stands to reason also that many of the children in families having a positive history, or where positive contact is noted who yet escape the disease, owe their immunity in large part to the fact that their resistance has not been lowered by the enfeebling communicable diseases.

The baleful effects of influenza were constantly obtruded; and it was an ordinary incident to find those who had suffered from influenza dating all their trouble from that period. Measles, pertussis and influenza, were in the order named the most frequent of the diseases recorded; and pneumonia and pleurisy took the next places. For the most part these were unilateral and the pleurisies were dry. As a general rule they were uncomplicated by lung abscess or empyema. We have found, however, a few chronic discharging pyopneumothoraces; and in practically every one of these cases we

found little or no parenchymatous lesion in the lungs. We did not examine the character of the discharges; but from the meagre information we could get of these cases we have concluded that the cause of their slow closing must have been due to adhesions which prevented a complete expansion of the lung.

Rheumatism was mentioned by a number. I do not place great store on malaria information, any ache or pain otherwise unaccountable being generally attributed to malaria. Scarlet fever was recorded in a few cases. Diphtheria was not a great factor. Typhoid had been noted in about 11% of the cases examined, and this incidence was almost entirely among the adults. Chickenpox had occurred in less than 1%, and the smallpox record was less than that.

We encountered great difficulty in obtaining accurate histories of blood-spitting. The amounts reported ranged from streaks while having bad colds to frank hemoptysis of as much as four quarts in certain cases. A definite record was made of the duration of all reported streaks or hemoptysis whether followed by fever and more blood-spitting or not. Several young girls reported blood-spitting in association with their menses. Of the positive cases 43.4% gave a history of blood-spitting; 30% of the suspicious gave similar histories, and 18% of the negative told the like. For the latter group particular care was taken to establish the history, but there were no demonstrable chest findings to account for the bleeding, yet some cases gave histories of profuse hemorrhages.

A temperature of 99 or above was found in 27.4% of the positive, in 30% of the suspicious, and in 18.7% of the negative. This record shows the necessity of taking the temperatures of suspected cases over a period of several days and not depending upon one temperature alone.

Cough was present in 70% of the positive, in 64% of the suspicious, and in 51.7% of the negative. In the latter a fair percentage was associated directly with colds and was not constant as in the other classes. Expectoration was frequent in all classes; positive, 67%; suspicious, 60%; negative, 42%.

Pulmonary tuberculosis was found oftenest in the incipient stage. Generally there was a right sided involvement usually in the upper or middle lobe. Left-sided lesions were rare. Basal lesions may have been present in several cases but physical examination did not alone give conclusive evidence, for there were cases with rales at one or the other base apparently not of pleural character, and among patients who had no particular symptoms, some raised expectoration and some did not. We found a number of apparently arrested cases and some apparently quiescent.

Glandular tuberculosis was found infrequently in adults; but we examined a number of children with enlarged cervical glands usually associated with infected tonsils and decayed teeth. We did not, however, have time to make tuberculin tests for those suspected, and that is necessary for a positive diagnosis.

Tuberculosis of the bone was rare; and it is interesting to note that, without exception, those examined by us and showing bone tuberculosis were without the pulmonary variety; that is, they were free from pulmonary lesions. There were a few cases of Pott's disease.

Intestinal tuberculosis was found only in a few cases, all in advanced stages; and these have since died. Tuberculosis of other organs was seldom noted; and to my knowledge, we did not find a single case of lupus.

There were over 900 colored people examined. With the exception of the particular type of lesion as mentioned above, they showed an incidence of infectious diseases quite similar to the whites, with about the same frequency of cough, similar expectoration and hemoptysis and like temperatures. Since all morbidity records seem to contradict these findings, I can explain it only by the view that we had a disproportionately large number of negroes who came for precautionary examinations.

Of the 1240 positive and suspicious cases, including both white and colored, we recommended sanitorium treatment for 254. That is only 21% of the total and may seem a small proportion; but our sanatoria facilities are limited and we only recommend those who fulfill the following conditions: First, they must be ambulatory—only in rare instances do we endeavor to send to the sanatoria advanced cases indicating a poor prognosis; secondly, they must have such home conditions as would make it seem unlikely for them to benefit by home treatment—if the home conditions are such as to promise a cure we advocate their utilization.

Incidentally, it may be remarked that of

those recommended to take treatment at a sanatorium, a large proportion accepted the advice. Some of these remained until discharge and were greatly benefited; some returned the next day or so to their homes. These latter have been a marked detriment to our work since they discourage their neighbors who might be thinking of going to the sanatorium or who are taking the cure at home.

Our Real Problem.

Determination of the incidence of tuberculosis is our great work but it does not constitute our chief problem which lies in our inability to follow up adequately the cases we have found. This problem is relative. Where there are organized health activities, the difficulty is less; where there are no such organizations the problem becomes more serious.

We cherish the hope that, in those counties where there is a health unit or there is adequate nursing service, a permanent clinic may be established through the co-operative effort of the local physicians. That hope has been realized in Elizabeth City County; and there is no reason why it should not be realized elsewhere.

In some of the counties distances are great and transportation is difficult. We appreciate that these conditions are barriers, but mails go regularly; and, if the physicians report their cases, we can at least help by sending instructive literature to those who have the disease. That will not entirely subserve the best purpose, but it will help. However, we are powerless to aid in this line unless the doctors report their cases. There is a State law requiring the reporting of tuberculosis, but we never use the statutes except as a last resort. I may be pardoned, I hope, if I say that reporting of cases has been far from satisfactory. We know of hundreds of cases that are not reported. The doctors no doubt are busy and have some excuse for their negligence in this matter, but it is a serious problem and we cannot hope to solve it unless they help.

Co-operation of the physician is needed in another line. In all suspicious cases we endeavor to take a series of sputums. The inability of our nurses to follow up such cases has been a handicap; but we believe that these specimens would be repeated more regularly if the doctors would explain the necessity. If we send a single negative report, that generally ends the transmission of specimens from that source; and our containers remain unutilized.

I would like to impress upon the members of the medical profession in Virginia that when we ask co-operation we also express our earnest offer of co-operation. We are engaged to help the public, but we know that to help the general public we can do so, solely and only if we would be successful, through the instrumentality of the medical profession. The State Board of Health is not an agency for "State Medicine."

We are now compiling data on tuberculosis in Virginia; and we purpose to give you, from time to time, the benefit of our investigations. These papers will be published in the Virginia Medical Monthly, your official organ. We trust that our bureau may develop into a real necessity for all those, lay or professional, who are interested in the tuberculosis problem in Virginia.

I have spoken of co-operation in counties where there is organization of some sort. The problem is more difficult in the unorganized districts. People do not react favorably to strangers. When our nurses go into unorganized counties and make contact visits, previous to clinics, we are rarely able to get at the clinics those we want most. If some home people urge such attendance, the suspects are far more apt to come.

In one county, a local association, the King's Daughters, was largely responsible for the success of the clinic. They got out the cases, thirteen of whom were recommended for sanatoria treatment, nine of whom within a few days applied for admission. When such organizations are doing voluntary and valuable work in a community, they can virtually demand that people take advantage of opportunities for diagnosis.

Before I close this paper, I would like to suggest the need of some standardized method of diagnosis. It is now sometimes difficult to understand exactly what is meant by certain tuberculosis diagnoses. If a set standard could be adopted, all cases could be classified in accordance.

Let me in conclusion protest against the idea entertained by some even now, that tuberculosis is an incurable disease and that much unnecessary fuss is being made over it. Such people appear to think that if a man has T. B. he will die of it; the cases they have known

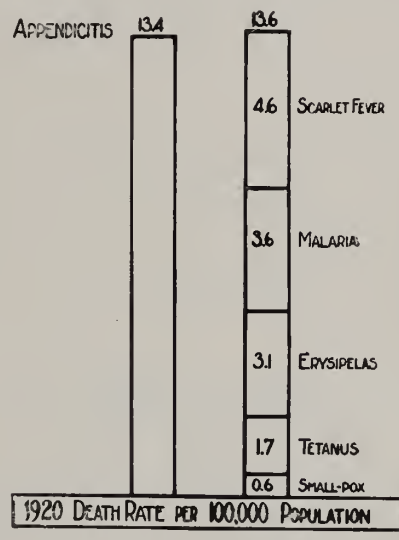
have all terminated fatally, so all will terminate that way. That is false reasoning. Where diagnosis is delayed too long, the chances of an arresting of the disease are, I regret to say, very slight; but tuberculosis in the incipient stage is easily curable. The death records in Virginia for the past five years show a decrease of twenty per cent for tuberculosis fatalities. Surely that is encouragement enough for the doubting; surely that should spur all of us to greater activity and more co-operative effort with hope virilized by the knowledge that we can still further and greatly reduce the economic waste due to this depleting disease and at the same time save lives and lessen sufferings—the great objects for which all of us constantly strive.

IS PROGRESS BEING MADE IN THE SURGICAL TREATMENT OF ACUTE ABDOMINAL CONDITIONS?

By A. MURAT WILLIS, M. D., Richmond, Va.

Medical science has not lagged behind in this era of progress; we can view with pride many of the triumphs which make the conflict with disease. The annual toll of diphtheria and croup has been reduced almost to a half of what it was seventeen years ago; while in a corresponding period of time, the number of deaths from typhoid fever has fallen to less than a quarter its original figure. Such facts as these show us that the efforts to lessen sickness and untimely death have not been in vain; and similar evidence is offered by the declining death rate of almost all the acute infectious diseases, influenced by a wider appreciation of the importance of preventive medicine and a more intelligent therapy.

As surgeons, however, we are more particularly concerned with the results that have been attained in our especial field. Here, too, brilliant achievements are not lacking; men are now living who saw the introduction of Listerism with its attendant benefits; within more recent years, improvements in the methods of inducing general anaesthesia and the discovery and wide application of local anaesthesia have materially reduced the danger of operative procedures; while the utilization of various laboratory aids has enabled us more quickly and certainly to determine the nature of the pathological condition from which the patient is suffering. But before we allow ourselves to be carried away with enthusiasm over these and similar very real advances, it might be wise to ascertain just what has been accomplished toward the reduction of the death rate due to certain important surgical diseases of the abdomen. In the present discussion, attention will be directed to only two; appendicitis and its sequel, diffuse peritonitis.

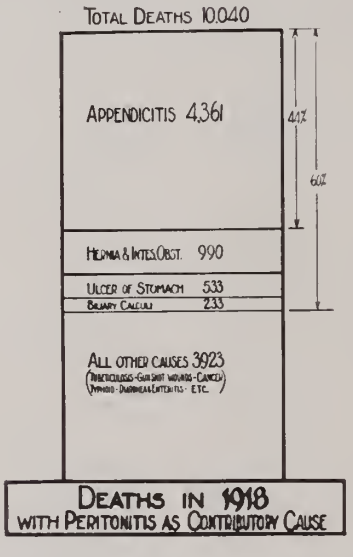


In 1908, the late J. B. Murphy, of Chicago, announced the results that had been obtained by the application of certain principles in the treatment of diffuse peritonitis. His method of treatment was so efficacious that the mortality rate of this dread condition was reduced to the astoundingly low figure of a little more than four per cent. in his hands; a reduction so startling that his work was immediately recognized as, apparently, constituting an important advance in the introduction of new principles and the omission of old, so-called injurious procedures. If one may judge by the literature of the past fourteen years, the last word was said in regard to the proper treatment of peritonitis when Murphy's paper appeared; and, although an occasional bolshevik may raise a voice of protest, this discord serves only to accentuate the perfect harmony of the "me, too" chorus proclaiming the solution of this weighty problem involved in the treatment of diffuse peritonitis.

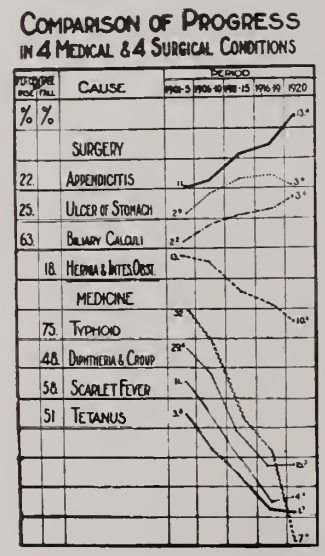
Of the 10,040 fatal cases of peritonitis that occurred in the registration area of the United States in 1918, appendicitis was responsible for

*Read at the fifty-third annual meeting of the Medical Society of Virginia, in Norfolk, October 31-November 3, 1922.

4,361. or forty-four per cent. of the toal number; and, strange to say, almost exactly the same percentage of fatal cases of appendicitis succumb to peritonitis. It would seem, therefore, that, in securing a means successfully to cope with peritonitis, we have robbed appendicitis of its chief danger.



In the five year period, 1901-1905, inclusive, the number of deaths from appendicitis per hundred thousand population in the registration area of the United States was eleven; in the succeeding five year period, it had increased to eleven and two tenths; in the period ending



with 1915, it was twelve and one-tenth; to rise to twelve and four-tenths in the quinquennial period, 1915-1919; while in 1920, *it was thirteen and four-tenths.* Thus, with all our boasted improvements we see a steadily mounting number of deaths from appendicitis.

Does such evidence justify us in our self-complacent attitude in regard to appendicitis? Is it the simple condition which even the laity now seem to regard it and have we definitely evolved the "sure" way of dealing with it? Hyperthyroidism is attracting an ever increasing amount of attention, and the problem of its management is, rightly. calling forth extended discussion, and yet to it were ascribed only 1622 deaths in 1920, as compared to over eleven thousand from appendicitis. Millions of dollars are expended annually and many of the best minds in the medical profession are concerned wholly in the fight against cancer, but appendicitis caused 2,000 more deaths than did cancer in 1920, when we consider only persons under forty years of age. Volumes have been written on the menace of diabetes, and the medical world awaits with bated breath the outcome of the clinical trial of Banting's pancreatic extract. in the hope that we may successfully cope with this disease; and yet, appendicitis was responsible for 3,685 more deaths in 1920 than diabetes when we consider only those under sixty years of age. Such facts as these should convince anyone that all is not well regarding the treatment of appendicitis and that the subject calls for the fullest and frankest discussion in order that this frightful yearly loss of life should be decreased.

1919 Deaths Before & After Age 50
By Percentage of Rate per 100,000 population

Cause of Death	Before Age 50	After Age 50
Appendicitis	83%	17%
Cancer	23	77
Organic Diseases of Heart	20	80
Diabetes	29	71
Biliary Calculi	32	68
Ulcer of Stomach	45	55
Hernia & Intes. Obst	48	52

Percentage of Deaths between Ages 10-39	
Cause of Death	%
Appendicitis	57.4
Tuberculosis	57.4

Undoubtedly, the rising death rate from appendicitis and peritonitis has several causes. Prominent among these is the reduction of the

number of rural practitioners, rendering it more difficult and expensive for the patients to secure medical attention. As a consequence of this, a practice of home medication has developed, a prominent procedure of which is the administration of cathartics in the treatment of any abdominal pain. In practically every case of diffuse peritonitis that has come under my care, there has been a history of abdominal pain and free dosage with cathartics, the physician being called in only late in the course of the disorder. Though there are many causes other than inflammation of the appendix which might produce abdominal pain I am convinced that a campaign designed to teach the layman that every instance of abdominal pain is, possibly, due to appendiceal involvement and that cathartics are absolutely contraindicated might be instrumental in saving many lives. As it is now, too often we get the sequence of purgation, perforation, peritonitis, postmortem.

Another important factor in this rising death rate is the mental attitude adopted by both laity and doctor. Impressed by the utterances of certain of the leaders, doctors first, and then the public, have come to regard appendicitis as a simple matter and the selection of the operator is often determined on the sole basis of convenience. This attitude has had its effect on the rank and file of the medical profession: since the layman considers the operation so simple, many physicians though possessing no surgical aptitude or training feel that they can safely undertake it.

The operative procedures selected have the utmost importance in influencing the result of treatment. A practice strongly condemned by Murphy and his followers was the attempt to remove the exudate which is encountered in cases of diffuse peritonitis; this being reprehensible both because the exudate is beneficial in nature and also because the attempt to remove it by irrigation of the abdominal cavity tends to produce "shock." Experience has led me seriously to question the correctness of both of these statements, the reasons for this skepticism being presented in the following discussion.

The entrance of infectious material into the peritoneal cavity calls for the outpouring of leucocytes and unformed defensive substances in the plasma. Undoubtedly, in its its inception, this exudate is designed to combat the infection; but with the passage of time, it becomes converted into a mass of decomposing protein material. Years ago, it was shown that the introduction of albuminous material into the peritoneal cavity of experimental animals enabled bacteria injected simultaneously to secure a foothold and produce a peritonitis, though the injection of the bacteria alone produced no serious effect. When, as the result of an appendiceal perforation, bacteria escape into the peritoneal cavity and, in spite of nature's efforts, succeed in producing a diffuse peritonitis, the debris of the exudate serves but to favor further growth and development; playing the role of a culture medium for the organisms. These old investigations have shown, therefore, that the exudate of a diffuse peritonitis, instead of combating the infection actually favors its development and, for this reason, every effort should be made to remove it from the cavity.

For another, probably more important reason, the removal of this exudate is demanded. Murphy condemned irrigation of the peritoneal cavity because it tended to shock the patient. The practice based on the pernicious doctrine of "get out quick," leaving the abdominal cavity filled with the decomposing fluid constituting the exudate is far more prone to cause shock than is the removal of the exudate by saline irrigation. Indeed, the insertion of the conscience-salving drain is tacit acknowledgment of the desirability of removing this fluid, but the futility of attempting the removal by drainage seems demonstrated by all investigations of the efficacy of these supposed pathways for escape of the fluid.

Recent investigations tend to show that the earlier theories advanced to explain the condition of shock are inadequate; and the evidence that is now available indicates strongly that in many, if not all cases, it is due to the entrance into the blood stream of toxic substances arising from the injured tissues. Thus, Cannon and his co-workers have shown that crushing the thigh muscles of a cat will cause the development of a condition which is indistinguishable from shock as seen clinically, and this will develop if all afferent nerve pathways are destroyed by section of the lumbar cord. On the other hand, clamping the vessels of the leg prevents the fall in the blood-pressure; which occurs promptly on removal of the

clamp. French surgeons, from clinical observations, were early impressed with the fact that there appeared to be a toxic factor in traumatic shock, and they have accumulated many observations in support of this view.

The investigation of Dale, Barger, Laidlaw, and others serves to explain the mechanism that is probably involved and also to identify one probable agent concerned in the production of shock. They have shown that histamin, a cleavage product of protein. when injected intravenously in small doses causes a marked fall in the blood-pressure, and this depressor action occurred in spite of arterial constriction and an absence of cardiac weakening. Further study showed that the fall in pressure was due to capillary dilatation, accompanied by an increase in the permeability of the capillary walls, the latter leading to a loss of fluid from the vessels and a consequent increase in blood concentration identical with that seen in traumatic shock. It is believed that histamin is only one of a number of substances which arise in the process of protein hydrolysis; a hydrolysis which may occur in dead tissue free from bacterial contamination but which is markedly accelerated by the presence of proteolytic organisms.

To summarize, it may be asserted without fear of contradiction that certainly many cases of traumatic shock are due to the entrance into the circulation of toxic materials which arise as a result of protein cleavage. Among these cleavage products, histamin has been identified and its effects after intravenous injection are similar to or identical with those which occur in animals whose thigh muscles have been crushed and lacerated and in men who have sustained wounds involving extensive destruction of muscular masses. From a practical standpoint, it has been shown clinically and experimentally that striking benefit may be obtained by the prevention of the entrance of these toxic agents into the circulation, either by removal of the dead tissue or by clamping the vessels leading from the traumatized area.

If we accept the view that autolytic decomposition of the protein of dead muscle can occur to such an extent that the cleavage products enter the circulation and produce shock, does it not seem that even more pronounced effects will follow from the decompostition of a nitrogenous fluid teeming with proteolytic bacteria in a cavity with such powers of absorption as are possessed by the peritoneum? The answer to this question seems so obvious that it would seem almost insulting to present evidence in support of the statement that absorption of toxic substances from the peritoneal exudate may cause a shock-like depression of the circulation; while, conversely, the removal of this exudate results in a prompt improvement. Nevertheless, experience has shown me that many able surgeons are so imbued with the idea as to the beneficial role of the exudate that they seem deaf to any argument which may be advanced against this view.

Johnston-Willis Sanatorium.

DISCUSSION.

DR. M. CALL, Richmond: As an internist I am not competent to discuss at all the technical procedure of Dr. Willis. I can, however, say something about the reaction reading his paper has had on my mind. I think it is extremely fortunate that these facts and conclusions should have been brought before a combined meeting of medical men and surgeons, for it is from the medical men primarily that these cases come, and the average medical man's knowledge of results from a certain surgical procedure is necessarily limited to cases that come under his own observation.

I think that the medical man is entitled to know what are the fundamental facts that govern the surgeon in selecting a definite operative procedure for a certain case, and not only is this true in appendicitis, but especially true in exophthalmic goitre and ulcer of the stomach or duodenum. If Dr. Willis' statistics are true and his interpretation is correct, he has given us some valuable information. If the facts are incorrect I, as a medical man, would certainly like to hear some surgeon get up and refute them, or, what would be better, let the Society refer it to the Surgical Section for report at our next meeting.

DR. R. L. PAYNE, Norfolk: I do not know when I have listened to a paper that showed more thought and more study and more real intimate knowledge of the subject than Dr. Willis' discourse this morning. It was fine.

There are two or three things that come to my mind. First, that the seeming discrepancy between the mortality rate in the present day of surgery in the last ten years, and in Murphy's time, in the ten year period prior, may possibly be due to the fact that we are having such a tremendous increase in the number of men doing surgery, and such a tremendous number of these men probably doing an indifferent, poorly qualified, and more or less inaccurate type of surgery. Given a case such as Dr. Willis speaks of, and give it to him to operate upon, there is no question about the results being better according to his mode of procedure because he has statistics that prove to him that his method is better, but for the general man doing surgery everywhere in the country and for the inexperienced interne, the Doctor's procedure presents a question that, to my mind, should be debated very seriously.

As to the drainage action, the drain becomes walled off within a few hours and never drains mechanically

as the laity has a conception of this drain action. That is a fact that can not be debated in any way at all, because a drain does not drain. You can take a glass tube and sew it up in a dog's abdomen and then remove it after a few hours and it will not leak a drop. You can't get anything into it or out of it. The way I understand drainage, and the consolation I get out of drainage is that we are dealing with a toxemia and that when we leave an opening, we provide for a certain amount of escape of that toxin. How much that is we do not know, but we do know that, given a more or less moribund patient, or a very ill one, a certain amount of escape of toxin means the turning point to that patient one way or another. That is the real good, as far as my conception goes, that draining does. It provides an opening, a means of escape for certain kinds of toxic material, and if there is any good in the drain, as far as I know, that is it.

Now the great difficulty in comparing experimental work along these infectious lines with actual pathology in the human lies in the fact that it is very difficult to compare infectious conditions in animals with the human. We have learned a great deal along mechanical lines from experimental work on animals. I question very much along the line of general peritonitis whether we can rely on the findings in a comparison of animals to man. The resistance of a dog to infection is tremendous as compared to the human.

In regard to washing out the peritoneal cavity, I have never done it except in the early years. I am not doing it now, and I am not going to do it until I know a great deal more about it. There are certain factors that don't seem to me will allow Dr. Willis to conclude very accurately that peritoneal lavage is yet to be accepted as standard technique.

Dr. E. J. Horgan, Washington, D. C.: From a personal interview I had with Dr. Willis this morning, and now having had the privilege of hearing his paper, I think that there are several things which he brings forth that we should carefully consider, and as Dr. Willis has asked for a frank and open discussion of this paper, I feel free to discuss them.

First, the mortality statistics and the comparisons he made; *second*, the experiments; and, *third*, the operative procedure which he employs. With regard to the statistics: Dr. Willis has given mortality statistics, not operative statistics, and he made this clear in his paper, but I think it should be emphasized. The statistics which he gave are mortality statistics which show death rate in appendicitis from all causes and complications. Exception could be taken to comparing the mortality statistics of appendicitis which occurs most frequently in young adult life with a disease such as malignancy which occurs most frequently later in adult life.

The experimental work which Dr. Willis did was interesting, especially in regard to what he succeeded in doing in raising the blood pressure in the dog after the animal had been made toxic by septic material obtained at operation from the human, but he did not tell us whether the blood pressure remained up. The difficulty we find in practice is to raise the blood pressure in a patient where it has been lowered. We are able to raise it for a short period of time by the injection of a salt solution in the circulation, or by the injection of a solution of acacia, but the circulation soon loses it as the tissues take it up and the blood pressure is again lowered when the volume is lost. To combat this loss in blood volume in sepsis or hemorrhage the transfusion of blood has been the most successful agent we have employed.

Third, with regard to the operative procedure: I think Dr. Willis' work opens a big field for discussion. The opinion has been held by most surgeons in recent years that washing out the peritoneal cavity with salt solution will have the effect of disseminating the infection throughout the peritoneum so that the lymphatics, not only in the area near the appendix, but those all through the abdomen, will take up the septic material making the patient more toxic. It may be that Dr. Willis is successful in removing most of the toxic material from the abdomen by the use of a suction apparatus and I think that, if his method is adopted his technique should be followed closely so that the toxic material is removed and not disseminated.

I want to say again that I admire Dr. Wilis for presenting this new method in the treatment of peritonitis resulting from appendicitis and also for the research work he did to try to prove its value, as well as for the success which he has had with his operative cases.

Dr. W. A. Plecker, Richmond: In consideration of the statistics that Dr. Willis gives, I think the apparent increase in the death rate from appendicitis is due largely to the fact that we are getting better registration than formerly. Six or seven years ago when we began our registration work, we did not designate peritionitis, as we do now, from one cause or another. Now, when a report of death from peritonitis comes into our office, we immediately inquire as to what the primary cause was, if not already stated, whether it was appendicitis, tubercular, gonorrheal, perforation of the intestines, trauma, or just what the primary cause was. I would like to emphasize the fact that we do not consider the term peritonitis as a satisfactory cause of death. What the primary cause was is asked, and in a very large percentage of cases it is due to appendicitis.

Dr. A. M. Willis, Richmond: I attribute to a number of causes the increasing death rate in appendicitis, among which is the greater number of men operating, as Dr. Payne brought out.

In regard to drainage, I think the average surgeon has in his mind when he puts in a drain to do some drainage. I am not talking about obsolete methods of irrigation, but modern methods, the use of electric suction apparatus which will remove in one minute a quart of this material. I want to go in and get out as quickly as is consistent with thorough work, as you have a better subject to work on and he does not drift out in the next few days. Using the irrigation method, out of twenty-nine cases I have gone back once for operation.

Regarding dissemination of these infections: In the first place I do not see how it is possible for irrigation to carry the infection any further in diffuse peritonitis. When you are running the solution in at the rate of a pint a minute and drawing it out at the same rate, you see how quickly this can be done.

We must not attribute too much to error in statistics. Why is it three of these acute surgical diseases are going up while others are going down? I feel that this death rate for appendicitis is about right, if anything a little low. Peritonitis may be high; the mental attitude of the doctor has a great deal to do with it. If he can avoid a certificate showing death from appendicitits, he prefers to. We may have the peritonitis a little high. The laymen do think there is a little danger in peritonitis. That forty-four per cent. may be a little high but the death rate for appendicitis is not high. Just figure a little bit and see if it is not our idea to minimize things.

THE FORCES WHICH PREVENT MODERN MEDICINE FROM BEING A SUCCESS.*

By A. A. HOUSER, M. D., Richmond, Va.

I am sure you will agree that physicians are not making a success in the cure of many people who come to them. I do not mean that a great many are not given some help, and, if testimonials were solicited, most physicians could put up a strong defense as to their ability to select very potent and well suited medicines. We all know that testimonials are far from being reliable, when we see the good things said by responsible people in the praise of worthless advertised cures.

This is a talk to physicians, about our ability to render the greatest health service to our patients. So far as building up a high degree of stable health, in the majority of patients, we are not putting it over in a very satisfactory manner.

As a further argument to show the reason for this paper, I would invite you to make a record of the number of doctors all of your new patients had before consulting you. And again, to look over the list of people whom you have treated in the past five years and find out how many have seen other physicians since consulting you. Surgeons will not have as great a percentage of patients who have seen other surgeons, as the medical men, but the number of people, who have been operated upon and helped, is not greatly in excess of those who have gotten no benefit from their operations. The fact that a patient was not helped by the operation is by no means proof that the operation was not indicated.

A further evidence of the failure of medicine to meet the needs of people is in the number who consult all classes of irregular doctors, who are less fitted to render service than the regular physician. But the treatment that the patients of these irregular doctors receive seems often to be just as satisfactory as ours.

I am going to show you why we do not render a greater service to our patients, and stop, to some extent, the migration of people from one doctor to another, more especially from the regular school to all classes of irregular practitioners. There is a law that has exerted its influence over man ever since he came into being, the tendency to follow the line of least resistance. It is much easier to give a dose of medicine that will relieve pain, than it is to ascertain the cause of pain and remove it. Surgeons as a routine remove pathology, which is highly proper, but often fail to give any serious attention to the cause of that pathology: the patient is not relieved, or in a short time other conditions of poor health appear.

The methods of the plant and animal doctors are quite different from ours. First, they establish a condition in which a normal plant or animal would make a success, then lend their attention to the disease, and the results are usually gratifying. The average physician gives serious attention to the disease. He sometimes mentions or suggests reforms, but feels that his time is too valuable to undertake an educational program, assisting his patient in the better ordering of his life, and improving his living conditions.

One of the great reasons why patients do not profit by the good advice that is given them by their physicians is that it is not told in a manner that they can understand. It is impossible for a physician, or any one else, to give a message to a man in an effective way, unless he is acquainted with his mentality and his life plan.

In the treatment of our patients, we must grasp the idea that the vital reason for a man's being well is that he may make a success of his life. The process of assisting him into so ordering his life, that he may make a success of it, brings about the only condition in which health is stable.

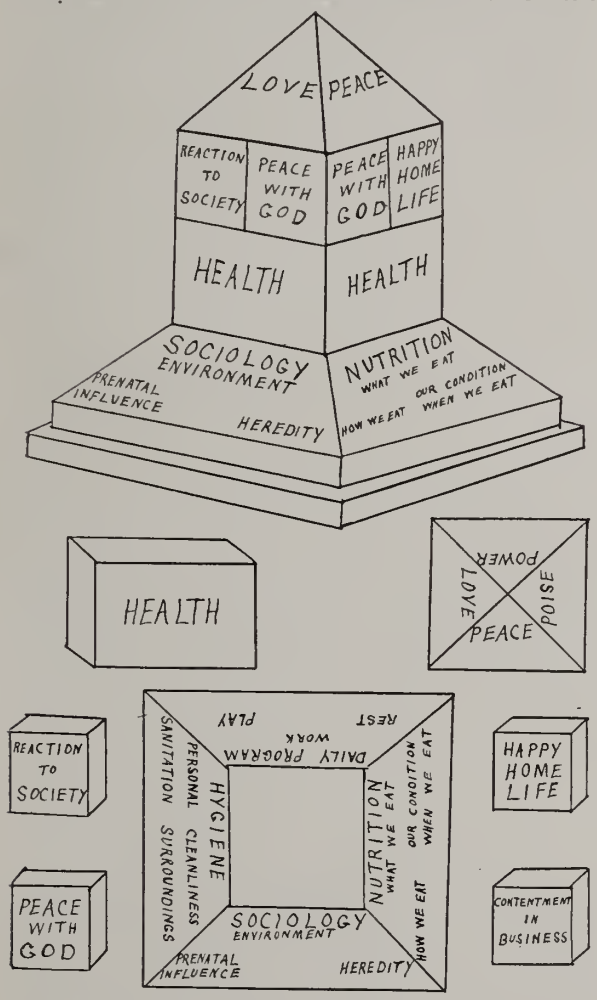
In most cases where disease is found in plants and animals, it is the direct result of some type of living error that has existed over a long period of time. And likewise in man, the fact that he is sick is evidence of error in his general living plan. There is usually one living error that is so much more prominent than the rest that we are apt to prematurely draw the conclusion that that is all that is necessary to correct in a patient.

For the past ten years, I have seen so few people who approach or resemble a well ordered life, that I have had made this little statue, representing the vital points of a well ordered and successful life. It is hard for us to pick out living error, unless we have well fixed in our minds the proper structure of a well ordered life.

*Read at the fifty-third annual meeting of the Medical Society of Virginia, in Norfolk, October 31-November 3, 1922

I repeat the thought that the forces which tend to make a man successful, tend to make him well. At this time I want to demonstrate that health is a part of this ideal frame work on which a well ordered life is constructed.

The statue is composed of four strata, the first being made up of four blocks, representing the four physical forces, which make the foundation on which health stands. The next



is health. The third stratum is made up of four blocks, representing the four kinds of mental reactions. They are the only processes that can endure in man, on health, without demolishing it. The fourth stratum represents the story that the man's face tells. It tells accurately the state of his physical and mental being. The only problem is to learn to read the language.

So in speaking of health, we are not in a position to do a great deal with it, unless the foundation that supports it and the type of thinking are right. If they are right, health has a great opportunity not to be impaired. If there is error, however, that can be corrected, we have a wonderful force to assist our medical and surgical intervention, towards making our patient well.

Life is made up of two kinds of reaction, those that have to do with the generation of energy, and those that have to do with the expenditure of energy. The physical forces, the tangible things outside our bodies, acting upon us, have most largely to do with generating energy. The mental forces, the intangible things within our brains, acting upon us, have most largely to do with expending energy.

The four divisions of this foundation are: Sociology, the effect that other people have upon us; Nutrition, the food we eat, and the method of handling it; Daily Program, how we work, rest and play; and Hygiene, which embodies personal cleanliness, sanitation and surroundings.

Sociology manifests itself through prenatal influence, heredity and environment. While the effect of heredity and prenatal influence cannot be avoided by the patient himself, his environment can often be corrected or improved. There is probably no such thing today as a perfect environment, but if we can grasp the picture of a relatively perfect environment, we can do much towards improving it. A person living in an environment constantly suggesting the danger of sickness will find it no help to his health, or in one of food fear will find it no help to his digestion.

All the growth we have attained and the strength we have gotten has come directly from the food we eat. It is necessary for us to have food that contains the proper nutritional elements, and our ability to get the proper nourishment depends upon these three factors, what we eat, how we eat, and our condition when we eat.

The third physical block is that of Daily Program. Work is a vital and primary thing, but there is a well defined limit as to how much work we can do in a day, with profit to ourselves or to our employers. Rest is equally important, and every man's cycle of work is going to be materially lessened, unless he has a definite program of recreation or play.

The last physical block, Hygiene, is, as a rule, more complete than any of the other three forces, from the fact that it is taught in

the schools and has been talked about more or less through the Daily Press.

No man can hope to be well, or stay well, without having his physical foundation reasonably well laid. With this foundation, health usually starts off favorably. But as man increases in age, there are mental reactions which develop and, if not harmonized, will demolish his health block, just as much as a failure to have his physical foundation well laid.

The first and greatest of these mental reactions is our Reaction to Society. As in the physical laws, we called attention to the effect that people have upon us, this mental reaction is the effect that we have upon ourselves, taking an unnatural attitude towards people. By an unnatural attitude, we mean people doing things not in keeping with their convictions, hoping to create a favorable impression. It is indeed refreshing today to see a person not effected by this reaction to society, such as changing his method of procedure to please people; lying to a patient, instead of telling him you do not know what is wrong. You have probably recognized your lack of effectiveness, in handling patients that you have allowed yourself to be concerned about whether you would please them or not. You have noticed the weak appeal of the salesman, or detailman, when he showed a concern as to what you were thinking of him. A spoilt child is a good illustration of an early reaction to society, using up energy destructively, that makes him more susceptible to disease than the child that is not spoilt. Social climbers is another class of people who waste energy by this unnatural reaction. Bashfulness and feelings of inferiority are prevalent conditions.

The second mental reaction, Peace with God, is one upon which a great deal of energy is often unconsciously spent. Every man has some religious conviction. What his conception of God is does not affect his health, but whether or not he is living in harmony with his conception makes a great deal of difference. A man may not be living in harmony with his religious conviction, but this condition has existed so long, that he fails to recognize the conscious and sub-conscious concern that is constantly disturbing him.

The third mental reaction is that of a happy home life, which should be made up of people who are congenial with each other and whose actions should be in concord, and they should have satisfactory sex life.

The fourth mental reaction is contentment in business. The amount of energy it takes to do a day's work, when we are doing something we like to do, on a plan that is our whole life plan, is practically nothing compared with doing something we are not interested in, or doing for a price, just as a means of support.

The fourth stratum, the cap stone, as we have said before, represents the story the man's face tells. This is the only part of the structure that is automatic. If you want to change your face, change your life. It is easy to tell a man's social standing by his face. It is easy to tell a man that is properly fed, from one that is over-fed or under-nourished. It is easy to tell a tired man from one that is rested, it is easy to tell a dirty man from one who is clean. It is easy to tell a man's reaction to society. It is not difficult to ascertain his religious happiness, his home life, or his contentment in business.

The more attention you give to this business of face diagnosis, the better you will be. I have often told women that they could throw away their powder and paint, straighten out their lives, and their faces would have a greater appeal. As physicians, if we want people to respect us and have confidence in us, we must be good physicians, give them earnest, honest advice and disregard the patient's reaction. Your face will unconsciously put it over.

We are now living in the midst of a popular wave of a new development in medicine, endocrinology. Almost every physician recognizes the fact that there are unlimited possibilities in the endocrine treatment, if he is able to select the proper endocrines. We all realize again that endocrine disturbances are often brought about by the mental condition of the person. Worry, fear and unhappiness will stop mother's milk. Excitement disturbs your thyroid cases, and in almost every endocrine case there is an associated mental disturbance.

Isn't it plausible to suppose that we could all convert ourselves into great endocrinologists, by solving the problems and harmonizing the lives of our patients, letting their own glands begin to resume normal work?

Professional Building.

DISCUSSION

DR. A. M. BURFOOT, Fentress: The forces that prevent modern medicine from being a success can,

I believe, be expressed in two thoughts; first, dishonesty, and second, that proper effort has not been made. When I say dishonesty, I mean by that there are so many of us who fail to make the honest confession, that we need the help of somebody else to give the particular case the service to which they are rightly entitled. When you do that, the patient appreciates that fact.

I think we have a serious problem which we fail to grasp. We in a careless, haphazard, routine way treat the patient, failing to grasp the situation that the patient has not had the benefit of the best work of the profession, and the result is they slip from us into the hands of the class of fellows engaged in healing the sick and seemingly performing miracles, for they are claiming marvelous things. Co-operation we must seek and give, and when we have done that and the forces at our command have been utilized, there will be absolutely no room for the class of fellows who claim to be doing the miracles Jesus himself did when on earth.

Dr. A. A. Houser: This is a subject that is very hard to discuss in twenty minutes. It is hard to make others understand what you are talking about in that time. The men in medicine that make a success are the men who have a lot of horse sense and not quite so much scientific stuff. I feel that the mind of the average physician today is being poisoned by the wonderful mysteries of modern medicine. The further we get away from healthy thought, the further we get away from the place where we are fit to live. While I am not talking against scientific medicine, I believe in it, it ought to be based on right living, and you can not do much until men have their lives harmonized so that they are fit to be made well.

Psychology is not a new thing. There is much literature being passed out to-day by so-called applied psychologists that really do not know what they are talking about. They are talking some good stuff but they are demanding too much for it. The only applied psychologist that ought to exist is the physician. He is the one man who has information enough to talk applied psychology.

REGIONAL ANAESTHESIA.*

By SOUTHGATE LEIGH, M. D., F. A. C. S.,
and
JAMES H. CULPEPPER, M. D., F. A. C. S.
Visiting Surgeons, Sarah Leigh Hospital, Norfolk, Va.

The subject of anaesthesia is always most appealing, has been given much thought and attention by certain members of the profession, and yet the average surgeon is only too content to follow the easier and less troublesome course which, as a rule, is the employment of straight ether, an anaesthetic most obnoxious to the patient, and frequently followed by disagreeable and dangerous complications, even in the hands of an expert anesthetist.

Nitrous oxide-oxygen, which can with safety and satisfaction, be administered only by an expert with wide experience, has for a long time been the anaesthetic of choice when available. Its critics, for the most part, have spoken without proper experience in its use. No anaesthetic should be administered by the untrained or poorly trained, and yet ether can be given, in some sort of way, by the inexperienced. With nitrous oxide-oxygen that is impossible. Without special training and considerable experience it cannot be given at all.

That undoubtedly is the real reason that the best and safest of all inhalation anaesthetics known to the profession has not come into general use. Those who have anaesthetists skilled in its use, employ it widely and with the greatest satisfaction. Indeed, they would feel lost without it, would feel if they had to give it up that their surgery had taken a backward step of many years.

The friends and advocates of nitrous oxide-oxygen have never claimed that it was perfect. We, especially, have always maintained that the equilibrium of complete and relaxed anaesthesia was so sensitive, the excursion of the pendulum between too light and too deep anaesthesia so short, that it was very difficult to maintain a safe and satisfactory anaesthesia. And here is where the work of the expert anaesthetist comes in. The unskilled gives the patient either too little or too much, interfering with the operation in the former and causing cyanosis and danger in the latter.

Any doubt as to the proper position of nitrous oxide-oxygen that may have existed in the minds of the profession was dispelled by the reports of unprejudiced observers of its use during the World War. In these reports it was proven conclusively that it was by far the safest and least depressing of the inhalation anaesthetics.

We have been making wide use of nitrous oxide-oxygen during many years, and have published a number of reports of our work and experience. We have never claimed that it was perfect, but have striven to correct its imperfections and improve the method of administration.

We have in nearly all cases used morphia and atropia as an aid, just as we and others have as a routine, employed the same with ether. Even with that aid, there are cases, especially abdominal ones, in which the fleeting effects of nitrous oxide-oxygen have interfered with the proper relaxation of the parts. Here it has been our practice to add,

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

from time to time, a very small amount of ether to the mixture.

During the past three years there has arisen in our minds a doubt as to the advisability of this combination, and especially as to its after-effects on the patient, particularly in upper abdominal operations. We have given the subject a great deal of thought and study, going so far as to return to straight ether in a series of cases, and still the question was not satisfactorily settled.

However, to our great relief, the advent of regional anaesthesia rendered further consideration of the subject unnecessary.

In abdominal work, as well as in other forms of major surgery, the blocking of the nerve supply of the site of the incision has given us just the aid that is needed to make nitrous oxide-oxygen practically always effective.

We have chosen to approach the subject of regional anaesthesia in this way, because we feel that this is, in many respects, the most important use to which it can be put. Without the slightest doubt it has answered our most earnest and persistent call for a method whereby we can continue to use nitrous oxide-oxygen in major surgery, without the aid even of a minimum amount of ether.

We have, of course, with the rest of the profession, always used some local anaesthesia. At one time we followed Crile's method of infiltration with a very weak solution of novocain in nearly all major work as an aid in preventing shock.

But employing nitrous oxide-oxygen always so freely with such satisfaction to our patients and to ourselves, we formerly did comparatively little work under local infiltration anaesthesia.

The advent of the present method of regional anaesthesia has produced more or less of a revolution with certain members of the profession. Very many minor and major operations are being performed painlessly and with but little discomfort.

Like so many advances in surgery, the method owes its success chiefly to two simple developments.

First: The discovery that large amounts of novocain could be used with perfect safety.

Second: That the novocain solution must be freshly made, as it rapidly loses its strength if kept for even a short period of time.

In reviewing the literature, we find that regional anaesthesia was advocated and practiced as early as 1887 by an American, Dr. Corning, who at that time, by means of injections around a cutaneous nerve of the arm, produced anaesthesia of the area supplied by that nerve. This method remained of little importance until 1890, when Oberts and Pernice produced a finger anaesthesia by injecting a solution of cocain at the base, and about the nerve trunk. These injections were made perineurally, and that is the generally accepted method of today.

Owing to the fact that the above mentioned authors used cocain in high percentage solutions, the method did not gain favor, until Braun in 1905 introduced the preparation from the suprarenal gland, at the same time diminishing the percentage of the cocain in the anaesthetizing solution and thus rendering this type of anaesthesia at all safe. To Braun, also, is given the credit of being the first to give a detailed description of the technic applicable to different regions of the body.

Most of the notable achievements in injection anaesthesia were accomplished about sixteen years ago by the discovery of novocain. This preparation had about one-half the anaesthetizing properties of cocain, was readily soluble in water, sterilizable by boiling, non-irritating to living tissue, and about one-fifth as toxic as cocain. In fact, owing to its high anaesthetic efficiency, and its low toxicity in comparison to cocain, Bier, before the Surgical Congress of 1909 in Belgium, voiced the sentiment that cocain should no longer be used as an injection anaesthetic, but should be limited in its field of work to anaesthetizing mucous membranes. This doctrine has also been advocated by Professor Victor Pourchet of France, who has given to surgery the latest developments of this work in recent years. From his report, he has performed practically all of the difficult major, and delicate minor operations with this type of anaesthesia.

There are many advantages of regional anaesthesia which we wish to bring to your attention:

First: The low mortality risk. In our series of operations we have used a fairly large quantity of the solution, and have yet

to notice any deleterious effects which in any way might be ascribed to the action of the anaesthetic agent.

Second: The reduction of post-operative danger, and the elimination of all complications following a general anaesthetic, especially nausea and vomiting, with the consequent after effects of starvation and dehydration which occasionally cause disastrous results.

Fifth: The many special advantages in cer- of anaesthesia secures a physiological section of the nerves and suppresses completely the influence of trauma upon the higher nerve centers. This fact has been fully brought out and demonstrated by Crile.

Fourth: Absence of danger from asphyxia, such as in operations for empyema, wherein a large cavity might rupture into a bronchus with the use of general anaesthesia and the patient be unable to rid himself of the fluid by coughing.

Fifth: The many special advantages in certain operations such as hernia, where the muscle walls are entirely relaxed, no straining of the wounds from stertorous breathing, and elimination of elevating intra-abdominal pressure.

Operations such as hemorrhoids, appendectomy, cholecystomy, gastro-enterostomy, any operations about the vulva, perineum, vagina, cervix, lower uterine segment, rectum, fingers and toes, in the hands of a skilled technician, can be done with comparative ease, both from the standpoint of the operator and patient.

Sixth: The anaesthesia continues for one and a half to three hours after operation, during which time the operative field, particularly the severed terminal nerve endings, has become protected by the flow of serum before the anaesthesia passes off.

The advantages over simple infiltration anaesthesia are as follows:

The anaesthesia is entirely distinct from the operation proper, being instituted beforehand and at a point distant from the operative field, thus obviating the danger of necrosis of the tissues, such as sometimes occurs in local infiltration.

It is difficult to point out any disadvantages when used in suitable cases. It takes no longer time than general anaesthesia. If proper precautions are used, no toxic symptoms need be feared. We ourselves have used as much as 150 c.c. of one per cent. solution of novocain, with twenty min. of adrenalin in several cases without noting any toxic effects. Harris states in several thousand injections of novocain, involving all parts of the body, that he has never seen serious toxic symptoms.

For convenience regional anaesthesia may be discussed under the following headings:

1st. Foraminal, where the nerve supplying the part to be anaesthetized is injected either within or as it emerges from the bony foramen; for example sacral and coccygeal nerves through sacral hiatus.

2nd. Paravertebral, where the nerves supplying the field of operation are injected as they emerge from the spinal column, along side of the body of the vertebrae. This injection not only blocks the motor and sensory nerves to the skeletal tissues, but on account of the anterior communicating branches with the sympathetic system which supply the viscera, it also anaesthetizes the organs within the thoracic and abdominal cavities.

3rd. Peripheral, where the distribution of the nerves to the operative field are fan-shaped in character, the injection to be done at the base of the fan. In operations on the forearm and hand, the injections are made on the outside and inside of the arm above the elbow joint, while those for the fingers and toes are made at the base of the parts

Preceding ordinary abdominal incisions, where paravertebral anaesthesia is not required, the injections are made at a distance from and completely around the proposed incision, the long needle being introduced both subcutaneously and into the substance of the muscles, thus cutting off entirely the nerve transmission from the part, and affording most satisfactory relaxation. In such cases the necessary intra-abdominal manipulations then require a minimum amount of general narcosis. The after-following pain is also greatly lessened and delayed.

At present we are performing about fifty per cent. of our operations under regional anaesthesia alone.

It is the method of choice in all hernias, except in small children, in uncomplicated appendicitis, in operations about the hands and feet, including bunions, in face and neck operations, in empyema, and rib resection, cholecystostomy, and enterostomy.

In prostatectomy, the combined sacral injection and abdominal blocking is used, furnishing complete anaesthesia and relaxation.

Sacral anaesthesia, which seems entirely devoid of immediate or remote danger, furnishes the most brilliant example of regional anaesthesia. Occasionally, the anaesthesia is not complete, but it usually is, and permits without the slightest pain all operations about the rectum, perineum, and vagina. One of our notable cases was a resection of the rectum by the Mayo method, with no pain whatever, until the peritoneum was reached, when the slight sensation produced was relieved by novocain infiltration.

The scalp can be completely anaesthetized. We have done one decompression entirely under regional anaesthesia.

In various upper and lower abdominal operations, the preliminary blocking of the site of incision by novocain not ony anaesthetizes the parts but produces the most perfect relaxation, far better than can be gotten with ether. With the abdominal wall thus relaxed, the operative procedures are carried on nicely with nitrous oxide-oxygen without the aid of ether.

The same is notably true of all operations on the kidneys, where much less general anaesthesia is required and the complete relaxation produced renders the operation very much simpler.

Regional anaesthesia is applicable to practically all the operations of surgery, either by itself, where we are using it in fifty per cent. of the cases, or in conjunction with nitrous oxide-oxygen where the novocain greatly lessens the amount of the general anaesthetic and renders unnecessary the addition of ether. The blocking of the nerve supply also either prevents or markedly reduces the amount of shock.

The technic required in regional anaesthesia with novocain is comparatively simple and varies according to the different parts of the body involved.

Freshly prepared solutions are absolutely essential and special syringes with flexible needles are most convenient.

Study has to be made of the nerve supply of the parts and there must be complete blocking of the nerves to produce perfect results.

We have had a few cases of spinal anaesthesia in which the anaesthetic effect was perfect, and yet we feel that that method of anaesthesia has not yet reached the stage where it is safe enough to recommend for general use. There is but little doubt, however, that novocain in spinal anaesthesia is the safest preparation so far discovered and its use marks a step in the right direction. Yet the most conservative clinics, including the Mayos, still feel that it is not altogether a safe procedure.

By adopting regional anaesthesia, we have greatly curtailed the use of general narcosis. The employment of mixed forms of anaesthesia, while not attractive in theory, has given much better results in our hands, in the way of less shock, pain and discomfort to the patient, than simple narcosis.

The public in general is waking up to the newer and simpler method of overcoming pain and the unpleasant factors of surgical operations, and the sound of the old adage, "I hate to be put to sleep," is being heard from all directions. They are beginning to realize that a simpler and safer means of taking away their pain and suffering from surgical operations has at last been found.

Discussion

Dr. Claude Moore, Roanoke: Dr. Leigh took up this subject from the standpoint of surgery. I would like for you to see one or two things from the standpoint of the patient.

Too many people do not mind taking an anesthetic until they have had one, and then they never want another. I believe that many times we frighten patients by telling them that we are going to use regional anesthesia, without explaining to them how it is done. A great many patients go to sleep in their room and wake up in their room, and until they have had an anesthetic they do not know what they are going through.

I have known a great many men to get out their long hypodermic needles, and fool around mixing their solutions, and frighten the patient with the idea of local anesthesia. It is surprising how many people hate to have a needle stuck into them. The less they know about the procedure the better satisfied they are, and it behooves us to use great care in not frightening the patient and so get his best co-operation at the beginning.

Dr. S. H. Graves, Norfolk: I just want to voice a plea for the more general use of Regional Anaesthesia and also in conjunction with Nitrous Oxide-Oxygen.

Dr. Leigh has mentioned some very good points in this connection.

The proper handling of the patients is important. It is usually well to carefully explain to them some of the details of the procedure.

The technic of Regional Anaesthesia is simple and is best learned by watching the surgeon who is skilled in its use. The solutions must be freshly and care-

fully prepared. We find the nurse in charge of the operating room to be the best one to handle them.

In anesthetizing the nerve trunk, it is often hard to make the injection in close proximity to the nerve, but by using a large amount of the solution, the result may be easily obtained.

Our experience wih Regional Anaesthesia has been most satisfactory and we find it greatly superior to the "infiltration" or "local" methods formerly employed.

Dr. Southgate Leigh, Norfolk, (closing): We have had a number of debilitated old people, suffering from hemorrhoids, where we were afraid to use general anaesthesia, and in these cases we found no depression whatever from Regional Anaesthesia by the sacral route.

A spot of skin is first anesthetized, using a fine needle. Then a long flexible needle is inserted and passed carefully up into the sacral canal, and through it is injected a sufficient quantity of the solution to cause complete anaesthesia of the entire rectal and perineal regions. This result and complete relaxation are produced in from five to twenty minutes.

REPORT OF A CASE OF PULMONARY ABSCESS OF LOWER RIGHT LOBE TREATED BY ARTIFICIAL PNEUMOTHORAX.*

By C. L. HARRELL, M. D., Norfolk, Va.

Mrs. "M," white, aged 27, housewife.

Family History: Negative.

Past History: Usual diseases of childhood, not very sick with any. She has not been entirely well since birth of first baby six years ago. Had influenza in 1918.

Present History: On August, 24th, 1920, was confined at home; had a normal delivery. For two months prior to the birth of baby she was sick with headaches and general debility. Four hours after delivery she began to have convulsions; she had four at home, was then taken to St. Vincent's Hospital in an unconscious condition. She remained unconscious until the following day. On entering the hospital her temperature was normal, pulse 68, respiration 18; she had no more convulsions. Three days later, August 27th, her temperature shot up to 101 3-5, pulse 100, respiration 26. On August 30th, she began to complain of pain in right chest and slight cough. On September 1st, temperature rose to 102 3-5, pain in side more acute, cough worse, and a diagnosis of pneumonia was made. On September 7th, she began to expectorate thick prune juice sputum, and was growing rapidly worse. On September 12th, the pain in right side was so acute that it required morphine for relief. Cough had gotten very severe and she was raising large quantities of blood tinged mucus with a very fetid odor.

On September 15th, I was asked by the attending physician, Dr. R. S. Kight, to see the case. I found a critically ill woman, coughing almost incessantly and raising large quantities of muco-purulent substance, blood streaked, with an odor so foul that one could barely stay in the room. She had a temperature of 103, pulse 140, complaining of severe pain in right chest, difficult breathing with a choking sensation that was made worse when she turned on her left side.

On examination, which was quite superficial on account of extreme illness of patient, I found the lower right lobe almost flat to percussion front and back, and dullness over the upper lobe. There were heard numerous coarse rales and squeaks over entire right lung, most marked in the back. The heart was quite rapid, the sounds were distant and feeble, no murmurs were heard. I concurred in Dr. Kight's diagnosis of abscess of the lung and advised an attempt at compression, though the patient appeared to be too sick to stand any kind of an operation.

On September 16th, I gave her 300 c.c. of air under local novocaine anesthesia. This aggravated the cough for a while and the expectoration was more profuse for the next two or three days, but much to our surprise the temperature dropped to 99 the first night and the pulse to 90, and she had a fairly comfortable night. The first compression was given about 3 P. M., but she still required morphine for relief. On September 18th, the temperature had again risen to 102, she was given 200 c.c. of air with a manometer reading of —2+2. An examination at this time showed that I had a fairly good compression of lower portion of right lung. On September 24th, she was given 400 c.c. of air with a +3 pressure. She was still coughing a great deal and expectorating very freely, but from now on she showed slow but steady improvement. On October 4th, she got 400 c.c. with +2 pressure; October 13th, 500 c. c. with a +2 pressure.

The patient was permitted to leave the hospital on October 15th,—seven weeks from the time she was taken sick, four weeks from the time she began to take gas. She was much improved, though still coughing and expectorating, with a temperature ranging from 98-100, and pulse from 80-90.

*Read by title at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

The next refill the patient came to the office. On October 27th, she got 500 c.c., November 23rd, 550 c.c., December 7th, 200 c.c., and December 21st, 450 c.c., with a +4 pressure. At this time it was thought best to discontinue the compression. She was improving all the time, cough and expectoration getting less and less, but she was getting very nervous over the treatments. She took gas for 13 weeks, had nine refills, taking in all 3,500 c.c. of air.

On February 12th, 1921, she reported at the office with a normal temperature, pulse 80, weight 120, which was about her normal weight. I failed to mention that several specimens of sputum were examined, all being negative to tubercle bacilli.

The patient was last seen on October 24th, 1922. Her temperature was 98, pulse 88, weight 130, more than she had weighed in five years. She says that she still has a slight cough and slight expectoration, at times. She was also complaining of pain in left shoulder, and occasionally in right chest. On examination several badly decayed teeth were found which might explain this.

On chest examination there was slight dullness over lower right back from angle of scapula down. Distant breath sounds and a few coarse rales were heard after cough over same area, and as far forward as mid-axillary line. She looks well and says she is feeling well. She states she has been doing all of her own work since about six months after her illness.

Comment: I believe if any other kind of surgical procedure had been attempted on this lady she would have succumbed as she was almost moribund. As to how the compression worked, I am not prepared to say, except that the diseased area of lung was compressed or partially compressed and by cutting off the blood supply and lymph supply a smaller amount of toxins got into the circulation. As the lung was compressed, it was more readily emptied and a smaller amount of secretions were formed. Remember that the air separates the parietal from the visceral layer of the pleurae and serves as a cushion between the two, thus relieving pain.

I believe in all cases of pulmonary abscesses, especially in extremely ill cases, pneumothorax should be given a trial before more radical surgical procedures are attempted. It is much simpler, safer, and can be administered with minimum amount of shock.

Taylor Building.

WHERE CAN WE FIND OUR CASES OF INCIPIENT TUBERCULOSIS?*

By CHARLES R. GRANDY, M. D., Norfolk, Va.

Ever since the medical profession recognized that tuberculosis was curable, if it could be treated before it was too far advanced, a constant effort has been made to find incipient cases and get them to the sanatoria for treatment. When we were beginning the organized campaign against consumption, we all thought ourselves capable of finding these incipient cases for at that time we were depending almost entirely on physical signs to determine the stage of the case of tuberculosis. But, about ten or fifteen years ago, it began to dawn on us that the early cases we had felt so proud of discovering had frequently had symptoms years before, from which they had recovered only to have them appear later, and so they were not beginning cases at all. And then I began to appreciate that I had never seen incipient cases, and began to distrust my powers of diagnosis, until I had talked the matter over with some of our most able specialists and found that they too were having the same difficulties. Now, the tuberculosis specialists have realized this difficulty to such an extent that they have ceased calling cases in which they find very little trouble, "incipient tuberculosis,' but rather term them "minimal," as they are the smallest lesions we can find. If then this "minimal" tuberculosis is not just beginning, but is starting up in a case which has been infected a long while before, where shall we look for our incipient cases? When do they really start?

Not so many years ago we all thought that tuberculosis was contracted in the same way that measles is, viz., that when the germs entered a susceptible body they promptly grew, and that in a short time active tuberculosis developed. Now, we realize that while this may happen in a few cases, it generally does not happen. This change of opinion was brought about first by the finding of evidences of healed tuberculosis in the great majority of autopsies, when a thorough search was made for such lesions; and secondly, by finding that almost all children of school age give a positive tuberculin reaction, though babies as a rule give no such reaction. These findings, along with many other experiments, not only show that nearly every one is infected, but also that only a small proportion of people

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

infected with tuberculosis develop the active disease. Furthermore, it is pretty generally conceded that the establishment of active disease in an adult does not usually come from bacilli derived from outside sources, but generally from those which have been enclosed within the body, but which have "broken loose" when the body resistance has been lowered. Indeed, there are some authorities like Fishberg, that maintain that tuberculosis is always contracted as a child, and only develops when a lowered vitality allows a quiescent lesion to become active.

On the other hand, Eugene Opie has shown that it is entirely possible for a massive dose of bacilli derived from without to overcome the body resistance, and to set up active chronic disease, for this has been repeatedly done in experiments on previously inoculated animals. Both sides, however, agree that there has been a primary infection, which is being pretty well taken care of, until a further infection, either from within or without, breaks down the body resistance and sets up the active disease.

There are undoubtedly a few incipient cases occurring in an adult, but most of these apparently run an acute course, as was shown in some of the African soldiers serving in the French army. But most adult human tuberculosis is like the experimental tuberculosis produced in animals already vaccinated with an avirulent strain of bacilli, which still further verifies the belief that all our chronic cases occur in people whom a previous infection has already made more or less immune, or in whom the resistance has at least been increased.

Now, in children as in animals inoculated with avirulent bacilli, the infection is practically always contained in the lymphatic system. (This of course does not include those acute cases where the bacilli are found all through the tissues, though the meninges are most markedly involved). The germs are most frequently in the tonsils, cervical, tracheobronchial, and mesenteric glands. Here they are more or less securely walled in, and frequently lie dormant for years. This is the real incipient stage of ordinary tuberculosis. It is not a lung tuberculosis but a gland tuberculosis, and in most cases it will never develop into a lung tuberculosis, for as Krause expresses it, "In the great majority of infections —fully ninety per cent.—the lymph nodes are competent in restraining the infection and keeping it quiescent." But, in the remaining ten per cent. they are not competent, and they allow the bacilli to escape in such numbers that they become implanted in other tissues and the frank disease develops. This change from the inactive glandular infection to the active tissue disease is the critical moment in the development of tuberculosis To prevent this change is a decisive point in the fight against tuberculosis, for if we can only hold the bacilli quietly in the lymph glands, they will remain harmless to the host, and will, of course, be unable to infect other people.

What then are the signs of this spreading infection? They are not so much the extension of physical signs, which are often slight enough in themselves, "nor the local symptoms of cough, sputum, or diminished function, which may be the residue of healed or arrested lesions, as they are the constitutional symptoms of fatigue, malaise, fever, irritable pulse, etc. These are the symptoms which almost always usher in clinical tuberculosis, and which announce the breakdown of resistance, if one wishes to view the case in this light." (Krause).

To what then can we attribute this breaking down of resistance and the liberation of the bacilli from the lymph glands? First, there are intercurrent diseases of many kinds, physical and emotional stresses, abnormoral metabolism, or indeed anything which puts added strain upon the part which contains quiescent, tuberculous foci. But another element enters here. It is the time when this added stress occurs, for if the bacilli are firmly shut up in a well sclerosed lesion, it will take a good deal more to liberate them than if the extra infection, such as measles, should occur when the tuberculosis infection is more recent and not nearly so well walled in. When we add to these strains a malnutrition caused by lack of proper food, fresh air, and sane living, we have an added condition for the development of the active disease, as has been recently shown in some of the central European countries.

In what way then shall we find the beginning cases of tuberculous disease? They are for the most part found in certain groups of children who should be examined and, if

found suspicious, kept under observation. These groups are:

1. Children from homes in which there are, or have been, active cases of tuberculosis, and in whom we can naturally expect frequent massive infections.

2. Children who are ten per cent. under weight—for a large per cent. of these children have been found to show signs of activity.

3. Children who are not keeping up with their classes, who are listless and tired, especially those who are missing much time from school on account of not feeling well.

4. Children with frequent coughs or fever.

Of course, I do not mean all, or even the majority of these cases have beginning active tuberculosis, but I do mean that they need watching, especially as is most frequently true, if they fall into two or more of these groups.

Suppose that an undernourished child is brought in for examination, and we find a quick pulse, an afternoon temperature of 99.5 or more, a history of loss of strength or "pep," with possibly some cough, what physical signs do we expect to establish our diagnosis? Let us remember first that the constitutional symptoms just mentioned are most important, and in children it is up to us to find another cause for them before we say that they are not from tuberculosis rather than the reverse, just as in the case of haemoptysis we feel that it is due to tuberculosis until proved otherwise. The first demonstrable change is probably the d'Espine sign, or the hearing of the whispered voice down to the fourth dorsal vertebra. This merely suggests enlarged tracheo-bronchial glands, which may or may not let the infection pass on to the rest of the body, but which may be large enough to be decidedly dangerous. Then we get increased dullness and fremitus between scapulae being as a rule more marked on the right. This may or may not be accompanied by rales and by broncho-vesicular breathing, which, however, must not be confused with the normal puerile breathing found in this area. We must not, however, confine our search to the upper lobes, for tuberculosis in children may appear in any part of the lungs, and is frequently more generalized than in the adult, and may even be very hard to distinguish from a generalized bronchitis. I am not talking of the acute miliary tuberculosis, but a chronic form to whch there is marked resistance, and in which the child has a much better prognosis than an adult with a like amount of involvement. Children, as a rule, do not go to cavity formation, but cavities are at times found and do not necessarily mean an unfavorable outcome.

To recapitulate, if we find an undernourished child that tires easily and has a quick pulse and an afternoon temperature of 99.5 or more, especially when accompanied by cough, and on repeated examination we find the d'Espine sign, slight dullness, BV breathing and a few rales in the upper lobes, or persisting rales at another point, we feel justified (unless another cause can be found) in putting that child on our list as an incipient case of tuberculosis, as defined in this article. If the child's general health and resistance can be built up, and no further massive infection occur, the disease should not develop beyond this stage; but bad surroundings and habits, poor food and intercurrent disease may increase this slight infection into a disease which will be very difficult to check.

When the disease progresses beyond this first or most usual form of childhood tuberculosis, we may get a form of disease closely resembling the chronic tuberculosis in adults. On the other hand, we may have a pneumonic form which seems to simply melt into smaller or larger cavities which is hard to diagnose from a broncho-pneumonia, or we may have a general miliary infection. In the last two forms the case seems to have little or no resistance, and resembles one in an experimental animal who has not first been treated with an injection of avirulent bacilli.

Long before we had our present knowledge, the Anti-Tuberculosis League of Norfolk felt that the best way to prevent the development of tuberculosis was to build up the body resistance of the children who showed latent or incipient trouble or, as we expressed it in those days, the "pretubercular" cases. For this purpose a cottage was purchased at Cape Henry in 1911, where from 12 to 23 delicate children from tuberculous households were cared for during the summer, and their strength and weight built up. As there were no facilities for bed patients, children with marked fever or severe coughs were excluded, though there were often cases who had previously had

pronounced symptoms, which they had overcome by rest and food at home. Practically, without exception the children improved, not only in health but also in their studies, for they were followed up in the schools during the winter, and made to report at clinic at stated intervals. The results among these children, many of whom are now grown up and married, have been at least as good as those obtained in the children's wards of the Maryland Sanatorium, for we only know of three of these children who have died of tuberculosis.

In 1920 it was decided to extend this work by aiding the nutritional work in the schools. This was done in a school, where the principal had at his own initiative asked for scales and was furnishing milk to the undernourished children. The Anti-Tuberculosis League agreed to pay for milk for the poorer children if, on investigation of the homes by our nurses, the children were found to need it. Later it was thought wise to examine all these children at the clinic, for the malnutrition is often attributable to other causes, such as hookworm and tonsils, though these complaints do not necessarily exclude tuberculosis.

Since scales have been put in all our schools, more and more children have been sent for examination, until the work has grown almost beyond the ability of the Monday clinic, which is set apart for white children, besides colored children coming on other days, numbering over 100 in all. From this group are selected the children for treatment at the seashore the next summer, and they again will be watched through the next winter, and the succeeding years, to see that their physical strength is maintained, so as to prevent the latent glandular tuberculosis from changing into the active disease.

We have reasons to feel proud of the fact that in Norfolk the tuberculosis death rate has been reduced from 307 in 1906, to 94 in 1921. But over against this we find that intensive work in Framingham has reduced its death rate from tuberculosis to 28.7, and we see that Norfolk still has much to accomplish. It is my opinion that this reduction in the death rate can best be accomplished by finding the real incipient cases in the children, and preventing them from becoming active instead of sending the active adult cases to our excellent sanatoria for treatment.

Of course, I am not so optimistic as to feel that we can expect at the present, or even in the near future, to find most of these really incipient cases. But, still I feel that this is the only line we can follow if we would successfully prevent the development of the disease, which is a much more efficient method as well as far cheaper than attempting to cure the well developed cases. Our trouble lies in getting hold of the cases at the proper time. To be secuessful we must have the full cooperation of the schools, not only of the school doctors and nurses, but more especially of the teachers who, I am glad to say, are now pretty generally beginning to appreciate that a dull child is very frequently a sick child, and when that child's health is improved his mental capacity is improved along with it, and the teacher's work lessened by just that much. With all the teachers looking out for their pupils' health, as many are now doing, more and more children will be sent us for examination, and more and more will be given a chance to keep their latent tuberculous infection from developing into active tuberculous disease.

Bank of Commerce Building.

DISCUSSION.

DR. R. C. CARNAL, Rochester, N. Y.: I listened with a great deal of interest to the paper by Dr. Grandy, and I think it is one of the most constructive that I have ever heard. The question of diagnosis of tuberculosis in children is exceedingly hard. These children, as Dr. Grandy says, are underweight, and below par in general, and usually come from homes where there is exposure to open cases.

We have found that good stereoscopic X-ray pictures are of great help. Unfortunately there are a good many men doing X-ray work who take excellent pictures but can not exactly interpret their findings in chest conditions. For that reason, I believe, a good many cases are overlooked and a good many cases are diagnosed wrongly. I believe that we can do no better than in every suspicious case, wherever possible, have pictures taken by men that we know can interpret their findings after they get them.

Another thing I would like to emphasize is this, that once you have come to a definite conclusion, or even strongly suspect that a child is infected, do not let that child go after he has apparently come to normal weight, and normal health, but bear in mind that any time within the next fifteen or twenty or thirty years that case may develop clinical tuberculosis. You should always watch these patients, and whenever you see them looking badly, apparently run down, give them a little word of caution.

DR. L. T. ROYSTER, Norfolk: One of the darkest chapters in life, certainly in medicine, is the chapter of tuberculosis, and yet the brightest ray of hope that has come into that chapter for many years was the announcement that practically all tuberculosis

was acquired in childhood, practically all. We owe Dr. Grandy a debt for bringing this matter to our attention in this very concise manner.

About the question of diagnosis of incipient tuberculosis, I do not think I have ever diagnosed a case of it incipiently. I think I am getting nearer to that today than I have ever come, not that I make that diagnosis yet, but following out the lines that Dr. Grandy has emphasized which I will not rehearse at this moment, we suspect every child who has malnutrition, who is not gaining weight, and who does not respond quite promptly to regulation of diet, etc., as having tuberculosis. Malnutrition, that I discussed yesterday, may result from almost every proven clinical entity that we know of in medicine. Any child that is not gaining proper weight, suspect it of everything on the calendar in medicine, but greatest of all tuberculosis. When tonsils are removed in the presence of glandular involvement in the neck, regardless of how slight, they should be examined for evidence of tuberculosis. If subsequently the glands break down or are removed after having broken down, the glands should be searched for it. You want to know positively whether they are affected or not.

I want to stress one more thing. Some of you may think I am a crank; I am, but I just want to emphasize this point; let us forget this thing of simply curing the patient, or child principally, of the present acute illness; that has to be done, but the minute you have done that, think then in terms of that child fifteen, twenty, or twenty-five years hence, and only that way. The foundation of society is the child from every possible standpoint. Treat that child as though it were already the President of the United States, or governor of your state, a man of finance in your banks; treat that child now so as to make it the best mother or father of the next generation, and don't think only of the acute condition, if you please.

Dr. A. W. Graves, Lacey Spring: I feel that every man who has the life of his community at heart is deeply interested in this subject of tuberculosis in children. I think in those homes where children are suspected of tuberculosis, the thermometer is an important criterion to teach them to use. If they have a slight rise in temperature, there is something wrong, it is a signal that something should be done, and if we instill and inculcate in their minds that we are their physicians, I feel that the thermometer is very beneficial.

Dr. W. E. Vest, Huntington, W. Va.: A very essential point made by Dr. Carnal is that in regard to the stereoscopic X-ray. I have practically abandoned the use of the flat plate as I have found the stereoscopic set much more satisfactory. Moreover, the X-ray plate ought to be read in the light of the physical examination and history. One can not depend absolutely on the X-ray findings any more than on the history of the physical examinations; these factors have to be correlated.

When considering temperature, especially in childhood, before making a definite diagnosis of tuberculosis, we should be sure to exclude the tonsils. Purulent tonsils will sometimes give in children a temperature which very closely resembles that of tuberculosis. Of course, the Von Pirquet is of great value here as in childhood generally.

Dr. Sam Wilson, Lynchburg: I have been impressed with the fact that a large number of children diagnosed as incipient tuberculosis give a negative Von Pirquet, and when we put these children on anti-syphilitic treatment they get well. We believe there is a very closely associated relationship between syphilis and tuberculosis. If you have a child with a cough, wasting, temperature 99½° to 100, having a negative Von Pirquet, put that child on mercury and iodides. It is very difficult to differentiate tuberculosis from syphilis, and I believe that the man who will put these cases that are difficult on iodides and mercury has many surprises in store for him.

Dr. Wm. B. McIlwaine, Petersburg: There are three questions that I would like to ask Dr. Grandy to answer for me. It has been stated that sixty per cent. of the cases of tuberculosis in childhood are caused by the bovine type of the bacillus. I would like to ask Dr. Grandy what he thinks of that statement. I am of the opinion that ninety per cent. of the cases are of human origin.

I would also like to ask his idea regarding treatment of glands infected with the tubercule bacillus by the use of X-ray, and of the treatment of cases by cold air.

Dr. Chas. Grandy: I am sorry I can not answer all these questions that have been put to me. In the first place, I did not mean when I gave this paper to exclude anything we were already doing in prevention of tuberculosis, to stop work of destruction of sputum or prevention of infection from the open case. The reason for this paper was to try to get all the medical profession to thinking on the subject of tuberculosis as starting in childhood, and to get them to looking for it in children, because there still are a number of doctors who have come to me this year and asked if I had ever seen real active tuberculosis in children. To this usual question, we say we are seeing lots of them, not only early cases but those with marked lesions.

The little sanatorium that we have is a cottage where we put our children in the summer and return them to their homes in the fall, and in this way we are able to improve their health so as to keep them up with their classes in school.

NOTES ON THE THERAPEUTIC USE OF BACILLUS ACIDOPHILUS MILK IN RICHMOND.*

By GEORGE F. REDDISH, Ph. D., and E. C. L. MILLER, M. D., Richmond, Va.

The use of Bacillus bulgaricus in treating intestinal disorders has, in the experience of many, been of doubtful value, and for that reason the more conservative naturally will demand scientific evidence before placing their confidence in a very similar organism, Bacillus acidophilus. The phrase "sour milk again" is not an expression that will hold the attention of the physician unless he has kept in touch with the more recent developments in intestinal bacteriology.

The scientific phases of the present problem have been in the experimental stage for about ten years; recently definite results of medical interest have developed. The treatise by Rettger and Cheplin (1921) is the cul-

*Read by title at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

mination of work done by Rettger and his colleagues over a period of a number of years, the climax of a series of investigations which have been of much scientific interest. The object of the first part of their work was to study in detail the effects of certain carbohydrates on the intestinal flora, by which they accomplished a change in flora from the putrefactive to an aciduric type. This phase was followed by another in which the feeding of living cultures of B. acidophilus, the organism which is dominant in the intestines of the breast fed infant, and produced a change from the putrefactive flora to one largely aciduric, a similar change to that produced by carbohydrate feeding. This change can be accomplished by the administration of rather large amounts of such sugars as lactose and dextrin, as has been shown by other investigators also, but the living culture method used by Rettger and Cheplin has been found to be superior to carbohydrate feeding.

Herter and Kendall (1908) found that the ingestion of large amounts of carbohydrates caused a decrease in the activity of the proteolytic organisms in the intestines of the adult. Rettger and Horton (1914) showed that white rats fed low protein diets showed much simpler intestinal flora than when on a mixed diet containing a high percentage of protein. In the latter experiment, the flora was changed over partially to that of the acidophilus type, the percentage of Gram-positives in feces from such rats showing from 85-100%, as against about 35% before the diet was changed. Hull and Rettger (1914) observed that the intestinal flora of the white rat can be changed from a type resembling that of the adult human to one almost indistinguishable from that of the breast fed infant by the addition of lactose to the diet. The predominating bacterial species in this flora was Bacillus acidophilus.

Rettger and his colleagues were never able to implant Bacillus bulgaricus either by feeding carbohydrates or live cultures of the organism. This is significant, for it shows that an aciduric organism normally present in the intestines is easily implanted if the proper conditions are supplied, but that a foreign organism, such as Bacillus bulgaricus, which is not normal in the intestines, cannot be induced to grow and establish itself in this new environment. It is necessary that implantation be effected if the putrefactive types present in the intestine are to be inhibited.

Torrey (1915) made a very practical application of this principle when he used lactose in the diet of typhoid patients. By using 250-300 grams of lactose per day he succeeded in obtaining stools from these patients which approximated in consistency those of infants, which means that the aciduric organisms displaced or at least reduced materially the numbers of typhoid organisms in the intestines. A little later, Torrey (1919) working with dogs, showed that lactose, dextrin and also starchy foods, to some extent, when added to the diet in large amount caused such an increase in the aciduric flora as to exclude almost entirely the putrefactive types. He found, furthermore, that protein of mammalian tissue encouraged the putrefactive types, while the vegetable proteins did not. This change in the intestinal flora is always followed by a definite change in the physical character of the stool. In the case of the hard, dry stool obtained in constipation, the change in flora results in the stool being transformed to a type similar to that of the young infant, i. e., soft, yellowish and non-putrefactive. Rettger and Cheplin (1922) found that chronic constipation responds to this form of treatment when other methods have failed, and the bowel movements become spontaneous, normal, soft and non-putrefactive. Such a change almost invariably is accompanied by improvement in the general health of the patient. They found also that diarrhea could be treated in a similar way with marked improvement and in some cases complete relief. Other cases treated by them with good results are: colitis, sprue and dermatitis. Cheplin and Wiseman (1921) report equally clear-cut results, especially in the treatment of constipation. Gompertz (1919) used broth cultures of Bacillus acidophilus with good results, both in treatment of constipation and diarrhea. Kopeloff and Cheney (1922) published similar data. It might be said, then, that the scientific work substantiating the merits of Bacillus acidophilus in its application for therapeutic use is past the experimental stage, and that it can now be recommended for general use in the treatment of a number of intestinal disorders.

It has been found that young milk culture is the most agreeable and most reliable form

in which this organism may be administered. Although there are many good commercial products which are of undoubted merit, some are probably of little value. Some are in the form of concentrated broth culture and others as condensed milk culture. In the present investigation, young milk culture was used throughout.

With the cooperation of some of the doctors in Richmond, the writers were able to investigate the merits of this principle in a variety of cases. The case reports will be given in the order in which the cases were treated. There was little opportunity to follow the results with determinations of the percentage of Gram-positive organisms in the stools, but since this phase has been thoroughly worked over, it was not considered necessary in this investigation. The reports which follow are given to show the clinical results only.

Subject A. An 18 year-old boy who was suffering from chronic constipation and who had been compelled to use laxatives since he was quite young. Natural bowel movement was practically impossible; even with varied exercises and purgatives movement of bowels often did not take place for three days or more. He was placed on acidolphilus milk treatment, using at first one quart per day. A stool was obtained with a purgative one day prior to the taking of the milk and it showed about 25% gram-positives. On the second day, the dosage was increased to one quart of milk plus 100 grams of lactose and this amount was continued for seven days. There was no result at the end of this time, not even noticeable gas, which was not a normal result after the taking of lactose. On the seventh day, he used a large enema, and then continued taking the milk and lactose. Three days later, the dosage of milk was increased to two quarts of acidophilus milk plus 200 grams of lactose and other food discontinued. This was used for 10 days before any trace of gas was noticed, but beginning on the 11th day, two soft, yellow stools were passed for twenty days with the exception of five days when only one stool was passed on each day. Subsequently, two soft stools per day were passed, even when the dosage was reduced to one quart of milk and 100 grams of lactose per day. At the end of this time, 225 grams of lactose without the acidophilus milk were taken with equally good results for three days, after which the stools became hard and dark. This amount of lactose was continued for six days, with only one hard stool passed during that time. The subject discontinued because of leaving the city. Although the results in this case were not obtained until after twenty days, and the good effects were not continued after the acidophilus milk was discontinued, the use of it plus lactose in large quantities at first, and then in smaller doses, did accomplish an effect more desirable than that given by purgatives and enemas. The movements were normal and the stools soft, yellow and non-offensive, showing that a condition approximately that of a baby's stools had been accomplished. If this subject had continued taking the milk and lactose, the normal movements would probably have continued.

Subject B. A middle-aged man who is father of Subject "A," and who suffered from a condition similar to that of Subject A, but in more exaggerated form. He had taken purgatives for so long that they had ceased to have effect, and enemas were his only source of relief. He would not have a movement for as long a time as ten days or two weeks when under circumstances not convenient for taking enemas. He had not had a normal movement for ten years.

One quart of milk plus 100 grams of lactose were given daily. By the third day considerable gas was noticed, and to get relief, he took an enema. After taking another quart of milk with lactose, he had three, soft, copious, loose movements within about two hours. After this, two, but sometimes only one, large, soft yellow, stools were passed every day as long as the milk and lactose were taken. His general condition was much improved, and he had a great deal more energy, and was more alert. While constipated he experienced periods of dullness, especially when the defecations were not made often. Because of the inconvenience of obtaining the milk and the necessity for taking it during the day, the subject became interested to know when the treatment might stop. Consequently, it was decided to take the milk and sugar only every other day and see if the good results would continue. As soon as one day's treatment was missed the good effects stopped, and although the usual amounts were again resorted to, only moderately good results were afterwards obtained. In fact, the stools obtained

after this were small, and usually hard, but they were spontaneous. After ten days, the subject became discouraged and stopped treatment altogether.

Subject C. A young man who was suffering from colitis, with bloody mucus. He had failed to get relief from various treatments, irrigations bringing only temporary relief, and then not complete. He was given one quart of acidophilus milk plus 50 grams of lactose. After the second day the bloody mucus had disappeared and the feces became softer. This condition continued for four days, or as long as the milk and sugar were given. In order to determine the effect of alternating treatments the milk was not given for one day. There was a return of the bloody mucus, but this was stopped next day when the milk and sugar were again taken. The stools then became very soft and yellow, similar to baby stools. After that he abstained from meat entirely and had no further trouble. On one day the stools were very numerous, about eight during the day. Since this condition was not desirable, the milk was discontinued and lactose alone given for two days, with good results. The patient was in such good condition that he stopped treatment altogether. After four weeks, there had been no return of the colitis symptoms and bloody mucus and the patient was in very good condition generally.

Subject D. A middle-aged man who had had constipation nearly all his life. Purgatives gave temporary relief, but they did not relieve indigestion.

One quart of acidophilus milk without lactose was administered daily. On the second day he passed a large, soft stool. With the exception of two days, one large, soft stool was passed daily during the twelve days the patient was under observation. During this time, he had gained 4½ pounds, his appetite had increased and he felt better generally. The laxatives he had been taking did not do as much good and their effect was not followed by such results as those obtained from the acidophilus milk. After twelve days' treatment, he returned home and one quart of milk was sent him daily (5 hours by railroad) for one week, during which he continued to derive the same benefits. His condition continued good after the milk was discontinued.

Subject E. An old woman (64), who had been using laxatives for a long time, and whose bowels had not moved naturally for a number of years. The laxatives had ceased to have their usual effect when taken in the usual quantities, and it became necessary to use double the quantity. These large doses made her sick. She was placed upon the acidophilus milk treatment and responded readily after taking one quart. Two soft, copious, stools were passed on the first day, but on the second only one. The quart of milk was then taken on alternate days, but later the dosage was reduced to one pint per day with equally good results, one and two stools per day. The good results continued for at least two weeks after treatment had been discontinued.

Subject F. A middle-aged negro woman who was constipated and had headache, dizziness and indigestion, and who got only temporary relief from purgatives, was placed on acidophilus treatment, taking one quart per day. After taking a quart per day for four days, the dosage was reduced to one pint per day with continued good results, practically the same as with the larger quantity. The stools were large, soft and yellow and typical of baby stools. The headache and dizziness entirely disappeared and the patient stopped taking the milk after eighth day. After two months, the patient still continued free from constipation.

Subject G. A young woman chronically constipated whom purgatives relieved regularly was given treatment which consisted of the taking of one quart of acidophilus milk daily for eight days. Relief was obtained the second day, and she continued to pass soft, yellow, stools each day. She stopped taking the milk because of having regular movements daily, and has continued to maintain this regularly, even after weeks without the milk or other purgatives.

Subject H. A middle-aged woman who was suffering from chronic constipation, as a last resort took acidophilus milk. Feces were hard and black, and enemas had been necessary for bowel evacuations. If the patient was not relieved in some way, severe headache followed. One quart of milk was taken on the first day, and one quart of milk plus fifty grams of lactose taken daily thereafter. Since there was no reaction by the third day,

she resorted to an enema to relieve her headache. Following this, the patient had eight, soft, yellow stools, and was somewhat nauseated. The amount of milk was reduced to one pint and no lactose was given for four days, then ¾ of a quart with fifty grams of sugar was given. Soft stools were passed daily, sometimes two large stools. These showed a large percentage of Gram positive rods, a very great increase over that shown before the milk was taken. Three days later, the amount was increased to one quart plus fifty grams of lactose and this continued for 22 days. At that time, the milk was incubated too long for two consecutive days and the acidity was so objectionable that the patient complained and came to dislike it. Even when the acidity was again normal, the milk did not seem to give as good results as before. The patient seemed to think that aside from palatability, the milk did not have as good an effect and she stopped taking it. Her former condition recurred soon after the milk was discontinued.

Subject I. Middle-aged woman who had been constipated for ten months, due, presumably, to lack of exercise. Laxatives did not relieve consistently and were very sickening. Three-fourths of a quart of acidophilus milk were given to her for two days without any result. Fifty grams of lactose were then added to this amount, and on the following day the patient passed one large, soft stool which was the first easy movement she had had in months. After two days, the patient complained of nausea following the taking of milk. The lactose was omitted for two days, on the first day of which two soft, copious stools were passed, but on the following day the patient became constipated again. The lactose was again added, and soft, normal stools were obtained, from two to four being passed each day. The patient felt much improved, and continued improving during the treatment, so much so that the dosage was reduced to one pint per day plus fifty grams of lactose; similar good results were obtained with this small quantity as with a quart. The patient reverted to her former condition when treatments were stopped.

Subject J. A young woman who was suffering from arthritis, presumably caused by autointoxication, and who had been constipated for a number of years, and had become dependent on laxatives for relief. Three-fourths of a quart of acidophilus milk was given the first day, followed by one quart plus fifty grams of lactose daily. The milk was quite nauseating, and little change was noted in the character of feces or flora of same within five days. The stools became softer, but never approached the state observed in the preceding cases. The symptoms of arthritis did not decrease and no improvement was noted in the patient after twenty-four days, even though 100 grams of lactose were added instead of fifty grams during the last ten days. The patient was given every variation of the treatment feasible except enemas with cultures of the organism. The bowels were sufficiently open to allow free passage of waste products, but for some reason the symptoms did not diminish during the whole period.

Subject K. An old, colored man who had suffered from chronic constipation for a long time and also had arthritis, arteriosclerosis and autointoxication. He had been taking laxatives for some time, without much improvement.

He was given one quart of acidophilus milk daily for five days, and had one and sometimes two movements per day, but they were rather hard. One hundred grams of lactose was added to a quart of the milk each day, and he passed two soft, yellow stools on the first day after taking it. He stated that he had less of the feeling of binding around the heart and that his vigor was improved. He continued this for twelve days, when it was stopped to see if the effects were lasting. It was found that after a few days he again became constipated. A commercial product (a mixture of lactose and dextrin) was on hand for trial and was given him according to directions on the container. The patient reported almost as good results from this as from the acidophilus milk. A commercial preparation of B. acidophilus (condensed milk culture) was then tried in the same way, and he seemed to improve quite as well with the other two products. With all three he was relieved in a large measure of the symptoms of arteriosclerosis and seemed much benefited in general health.

Subject L. An old woman who had suffered from diarrhea for about eight months, without relief from the treatments employed, as a last resort was placed upon the acido-

philus milk treatment, taking one quart of milk daily without lactose. On the third day, there was improvement in her condition, and she continued to improve rapidly until she left the city, 8 days after starting the treatments. The patient was more improved than she had been under any of the treatments previously employed.

Discussion and Summary.

The principle upon which the therapeutic use of Bacillus acidophilus is based is both logically and scientifically sound. Implantation in the intestines of an aciduric organism of intestinal origin will displace, in large measure at least, the harmful putrefactive types. Such a condition, since it brings about a simplification of the intestinal flora and substitutes helpful bacteria for harmful ones, is most desirable in the alleviation of certain chronic intestinal disorders. This change in bacterial flora can be brought about in two ways: by encouraging the aciduric organisms already present in the intestines, by supplying the proper food, and by administering living cultures of such organisms. The former method is best accomplished by the ingestion of lactose or dextrin; while living, viable cultures in milk or broth when taken in rather large amounts will produce the same effect more quickly and with less discomfort.

In the present work, young milk cultures of B. acidophilus were used for this purpose, Simplification of the flora was accompanied by a distinct improvement of the condition of the patients in almost every case. Chronic constipation and colitis were treated with success in every instance. A very marked improvement in the diarrhea case was noted after eight days' treatment; in all probability complete relief would have been effected if it had not been necessary to stop the treatment. The one case of arthritis treated did not respond to protracted use of the acidophilus milk, even when supplemented with lactose. In all probability, the condition was not due to autointoxication as was at first suspected.

The cases reported above show a variety of conditions which had not responded well to other treatments, but which were definitely alleviated by the acidophilus milk treatment. There is, therefore, a definite place for such a therapeautic agent as Bacillus acidophilus in the general practice of the physician.

Bibliography.

Cheplin, H. A. and Wiseman, J. I. 1921. Observations on the Effect of B. Acidophilus Milk upon Cases of Chronic Constipation. Boston Med. and Surg. Jour., 185, pp. 627-30.

Gompertz, L. M. and Vorhaus, M. G. 1921. Observations on B. Acidophilus. Medical Record, 100, pp. 497-499.

Herter, C. A. and Kendall, A. I. 1908. Fate of B. Bulgaricus (in Bacillac) in the Digestive Tract of a Monkey. Jour. Biol. Chem., 7, 203-236.

Hull, T. G. and Rettger, L. F. 1914. The Influence of Milk and Carbohydrate Feeding on the Intestinal Flora of White Rats. Centralb. f. Bakt, Abt. 1, orig., 75, 219-229.

Kopeloff, N. and Cheney, C. O. 1922. Studies on the Therapeutic Effect of Bacillus Acidophilus Milk and Lactose, J. A. M. A., 79, 609-611.

Rettger, L. F. and Horton, G. D. 1914. A Comparative Study of the Intestinal Flora of White Rats Kept on Experimental and on Ordinary Mixed Diets. Centralb. f. Bakt., Abt. 1, orig., 73, 362-372.

Rettger, L. F. and Cheplin, H. A. 1921. A Treatise on the Transformation of the Intestinal Flora with Special Reference to the Implantation of Bacillus Acidophilus. Yale University Press, New Haven, Conn.

Torrey, J. C. 1915. The Fecal Flora of Typhoid Patients and Its Reaction to Various Diets. J. Inf. Dis., 16, 72-108.

Torrey, J. C. 1919. The Regulation of Intestinal Flora of Dogs Through Diet. J. Med. Res., 39, 415-447.

Medical College of Virginia.

TREATMENT OF ECLAMPSIA.*

By J. L. EARLY, M. D., Saltville, Va.

There are some physicians who state if certain measures are carried out eclamptic convulsions would cease to exist. Certainly, except in a small minority of cases, it is a preventable condition. However, regardless of the fact of whether it can be prevented in all cases or not, we do admit that it is almost never seen in the ante-partum cases of a maternity hospital or in private practice where conscientious observance of the patient is the rule and where they faithfully follow the directions of their medical adviser.

The ones who do "get by," so to speak, are the fulminant cases of hepatic toxemia with no edema, little change in the composition or output of the urine, and with convulsions following shortly on the onset of nausea and vomiting, headache or visual disturbances.

Eclampsia occurs most often in the latter part of gestation, less often during labor, and least of all in the puerperium. Its frequency has been variously estimated from 1 to 250 or

*Read at the meeting of the Southwestern Virginia Medical Society at Wytheville, September 13 and 14, 1922.

1 to 500. The high blood pressure, headache, edema, nausea, vomiting, diminished urinary output, aside from the urinary findings of albumen and casts in the urine, are sufficiently indicative of pregnant toxemia. Physicians should not have the slightest difficulty in reading such a picture. Social workers in tenement districts and the much maligned midwife, with her all too short periods of instruction, have been known to at once recognize the conditions.

We have all had cases of eclampsia in our practice and in most cases, at least, we must admit the following:

We did not see the patient until the trouble developed, as frequently occurs in country practice.

We did not watch the cases as we should.

The patient did not apply for treatment until the toxemia was developed; she neglected or refused to carry out the simplest preventive or curative measures, would not report for observation, failed to send specimens of urine for analysis, neglected bowels or indulged in high nitrogenous food or alcohol or both.

The above facts being so true the preventive treatment is all important. The treatment may be divided in preventive and curative.

Preventive Treatment.

Thousands of pregnant women are unobserved until at or near the date of confinement. This is not only true in private practice, but in maternity hospitals as well. How often are we all called to see confinement cases and find that this is the first time the woman has given her medical adviser a chance to observe her condition, and we have been denied the opportunity of applying any preventive treatment?

Hence, a long step forward in the prevention of eclampsia is the attention that in the last few years has been directed to the importance of prenatal care of women, especially of the poorer classes for the purpose of reducing infant and maternal mortality.

The cardinal symptoms of eclampsia are, rapid pulse, high blood pressure, anorexia, gastro-intestinal disturbances, mental and physical lassitude, headache, decrease of all excretions, both solid and liquid, all either gradual or rapid. All pregnant women should be considered possible candidates for eclampsia and should, as soon as pregnancy is established, or certainly as soon as any of the foregoing symptoms appear, place themselves in the care of their medical advisers, and monthly or bimonthly examinations of the urine should be made.

In addition to the above, something more is needed since non-albuminic eclampsia exists in 9 to 16 per cent. of cases and is even more fatal than the albuminic cases. We should watch for signs of kidney inadequacy, a circulation surcharged with poisonous material and manifesting itself by high blood pressure, headache, dizziness, gastro-intestinal disturbances. Hence, the blood pressure should be taken at regular intervals, depending on how rapidly it rises. I have found in my practice that if the blood pressure is kept below 150, there is, as a rule, no danger, but any arterial tension above that is dangerous or approaching the danger line. Given a woman with the foregoing symptoms, the following treatment is suggested and should be pushed according to the severity of the case.

First: The amount of nitrogenous food should be diminished to a minimum.

Second: The production and absorption of poison in the intestines and body tissues should be limited and their elimination aided by improving the action of the bowels, kidneys, liver, skin and the lungs.

Third: The source of fetal metabolic products and peripheral irritation in the uterus should, if necessary, be removed by emptying the organ.

In cases where the kidney is involved only in a mild degree, the patient should be put to bed in a light airy room, and nothing allowed but water to drink.

The reduction in quantity of nitrogenous food is best met by an exclusive milk diet. If in three days improvement is noted, milk is allowed and, upon further improvement, starches are added to the diet followed by proteid vegetables and vegetable oil and butter. On progressive improvement a free vegetable diet, milk and one egg a day are permissible. Later, a little chicken or turkey may be added, but never a free meat diet. Spices, tea, coffee, alcohol, beef, veal, mutton and pork are strictly forbidden. Water in abundance may be given unless the heart is overloaded.

I wish to emphasize the exclusive milk diet in the beginning as it is much easier to increase the food than it is to have to go back to milk alone. Any case showing certainly marked toxemia should be started on milk.

One may increase the excretion from the skin, bowels, kidneys and lungs. A brisk saline purge should be given at the start, followed by vegetable cathartics since continuous administration of the former is said to have a tendency to produce headache and anemia. Water is given both night and morning on an empty stomach and is both a laxative and a diuretic. Diuresis is favored by the ingestion of large quantities of liquids, especially hot water. This, in combination with an exclusive milk diet, rarely fails to produce polyuria.

Woolen garments should be worn even in the summer season. If the toxemic symptoms are urgent, a hot wet pack may be ordered twice a day, but patients with weak hearts have been known to die in a hot pack, so the heart should be watched carefully for signs of failure.

Some authors condemn sweating, claiming that it is too depressing, that it concentrates the poison in the blood, and that the amount of poison eliminated is negligible. In my experience, I feel that I have gotten very little benefit from sweating.

Very few drugs are indicated. In mild cases, I have used buchu juniper and with good effect, but believe the drinking of larger quantities of water probably did them more good than the diuretics.

Should the above treatment not have the needful effect, should evidences of renal inefficiency increase, or should the signs of real nephritis appear, the induction of premature labor is not only justifiable but imperatively indicated.

Curative Treatment.

The time-honored principles of curative treatment of toxemic convulsions are: *First*, the control of the convulsions; *Second*, the elimination of the poison; *Third*, the termination of the pregnancy.

Eight to ten per cent. of eclamptic patients will die, no matter what treatment is used and eighty per cent. will recover under a conservative treatment which does not include shock producing drugs or an operation. The treatment as applied may be aptly divided into the ultra-radical, who believe in incision of the cervix, difficult forceps application, and abdominal cesarean operation; and the ultra-conservative who rely on morphine and eliminants.

I believe a course between the two or a reasonable conservative treatment is best. So long as eclampsia is a mystery, a disease of theories, no treatment is applicable to all cases.

We cannot individualize all our cases, toxemia being the underlying cause whether from liver, kidney or acidosis.

In a particular case an ultra-conservative treatment might cause more harm than an ultra-radical tratment and *vice versa*. The ultra-conservative treatment might be accepted by all if it were not for the fact that the shorter the interval that elapses between the first convulsion and the emptying of the uterus, the better the prognosis for the mother and baby.

Given a case of convulsive toxemia, a half grain of morphine should be given hypodermically, the patient placed in bed in a darkened, well ventilated room. Quiet and fresh air are very essential. Chloroform, nitrous oxide and ether are to be avoided if possible but, if any are used, ether is to be preferred.

Long continued use of any anesthetic lessens the patient's chances. A catheterized specimen of the urine is obtained for examination. The stomach is washed out with a sodium bicarbonate solution and about two ounces of magnesium sulphate solution is injected through the tube before it is withdrawn and allowed to remain; some prefer castor oil and in desperate cases three or four drops of croton oil in sweet oil may be inserted. A colonic irrigation with a solution of bi-carbonate of sodium is also given.

Morphine is repeated in doses of 1-6 to 1-4 grain as is indicated, trying to keep the respirations between ten and twelve per minute. Glonoin is used as a diuretic and anti-eclamptic, the latter indication being fulfilled by lowered high blood pressure. A full dose of sodium bromide in solution is given by rectum in extremely nervous cases. Some use chloral hydrate but sodium bromide will usually suffice and is not so dangerous.

Blood letting is used and in some cases I have thought it beneficial; in others it did no good and possibly harm. In cases where the convulsions recur frequently in spite of treatment, in which the pulse is full and strong, the face flushed or cyanotic, bleeding will do good. In cases of opposite type, it is a procedure of doubtful utility. It should, if possible, be reserved until after delivery as a hemorrhage at birth may make further bleeding unwise.

I have always been disappointed in the use of veratrum viride and have practically quit using same. Some place great reliance on it. With a strong rapid pulse it offers great benefit, the pulse rate being lowered by the drug. Convulsions are unknown when the rate is 60 or under. The patient should be kept in the recumbent position while it is being used. In my cases it apparently increased the shock.

Sweating is obtained by the hot pack with symptoms of heart failure carefully watched.

A multipara with no obstruction and with prospects of a comparatively short labor is a good patient for the conservative morphine eliminative treatment. A primipara with slowly dilating cervix and possibly 20 hours' prospective labor is not such a good risk, and unfortunately convulsions are more often seen in them.

The treatment of convulsions, as above out-outlined, is practically accepted by all obstetricians, except in minor points, but whether the pregnancy should end spontaneously or by artificial means has caused endless discussion. Opposed to the conservative plea as previously mentioned is the fact that the shorter the time which elapses between the first convulsion and the termination of the labor, the better the chances for the mother and the child. While on the other hand eclamptic patients make the worst surgical risks, owing to shock from operation and shock from cardiac depressants like veratrum viride, phlebotomy and over-sweating.

If under a conservative treatment the toxemia steadily grows worse, the labor should be terminated as soon as possible, both from the standpoint of the mother as well as that of the baby; more of the latter are saved if the condition is not prolonged.

The method of delivery depends on many things: period of pregnancy, environment of patient, state of cervix, skill of operator and complications such as a contracted pelvis, placenta previa, etc.

Before the seventh month all babies die, so enough dilatation to do craniotomy and extraction is all that is necessary. After the seventh month efforts should be made to save the child as well.

If the cervix is dilated and the head engaged, delivery is accomplished at once by forceps. If the head is not engaged at the brim, version should be done. If the cervix is shortened and a comparatively thin elastic border remains, it can be dilated with the fingers or some of the metallic dilators, labor being terminated by forceps or by version. Sometimes in hydramniotic cases or in twin pregnancy, rupture of the membrane and escape of large quantities of the amniotic fluid will lessen the convulsion. The beneficial effect obtained from the removal of the child and uterine contents seems in many cases to be a pressure relief, pressure on the kidney, renal vessel, intestines, portal circulation or liver.

Until we know more of the cause of eclampsia, abdominal cesarean section will always demand a place in the treatment. Given a primipara with a long bottle necked undilated cervix and 20 to 36 hours of possible labor before birth, abdominal cesarean section must be considered. Certainly twenty to thirty minutes' operation as compared to 20 to 36 hours of labor, terminated by high forceps and traumatism, is the better chance and offers the best results to both mother and child.

In pregnancy, during the first stage of labor, the barrier offered too rapid delivery is the undilated cervix and it is just here that many obstetricians differ in their method of procedure.

Expectant or palliative treatment in many cases will be followed by death of the child and in about one-third of the cases the mother succumbs. The popular method of the present day seems to be the mechanical dilatation of the cervix and prompt extraction of the fetus. This method is all right if it can be done in a safe period and without damage to the uterus.

Certain cervical conditions may exist, as previously mentioned, which prevent mechanical dilatation in a reasonable time or result in great damage to the lower uterine segment.

During the delivery of eclamptics, as strict asepsis as is possible should be observed, because they are particularly liable to infection, the liver and kidneys being weakened and their immunizing power lessened.

In conclusion, I wish to make a plea for more work along the line of preventive treatment since the convulsive stage is attended by a high mortality of both mother and child, no matter if she has the attention of a most skilled obstetrician. If all women, and particularly young women, would present themselves to their medical adviser as soon as pregnancy occurs, many cases of convulsive

eclampsia could be prevented and those cases which are not responding to treatment could be terminated early in pregnancy before serious damage has occurred.

RELATION OF A MEDICAL EXAMINER TO A LIFE INSURANCE COMPANY.*

By J. H. DUNKLEY, M. D., Roanoke, Va.

In the various phases of the life insurance business, the Medical Examiner holds a most important position. As it is impossible for the Medical Director to personally examine every applicant, he must delegate that duty to the examiners in the field, and on their examination depends, not only the acceptance of the risk, but also in a measure the mortality experience of the company. The relation of the Medical Examiner to the company is, therefore, a most important one, and upon the manner in which he performs his duties depends in a very large measure the success of the company.

The ideal Medical Examiner, in addition to proficiency in professional skill should be a good judge of human nature, must be endowed with an ability to use such tact as will enable him to elicit from the applicant all information that would in any manner bear upon the assumption of the risk, and must, above all, be possessed of a sense of moral duty to the company that cannot be changed by any prospect of personal profit. In making the examination, his duty is to obtain the facts relating to the physical condition, family history, environment, habits, and morals of the applicant, that the Medical Director when the report is received, may have as full a history of every phase of the applicant's life that would in any way affect his insurability, as he would if he had made the examination himself. To obtain these facts, and to fulfil the purpose of the appointment, his inquiries should not be limited to those set out in the examination blank furnished him, but should take the questions there given as suggestive of the facts sought, and should augment the examination by pursuing these questions in detail in order that his report to the company may be a picture of the risk as full and complete as the nature of the case will admit.

The blanks furnished by the company give only an outline of what is necessary in order that the Medical Director can have a pen picture of the applicant, and the examiner must remember it would be impossible to cover every point in the blank furnished, especially the details of every point necessary in the intelligent passing on the risk. Therefore, he should always not only depend upon the answers given to the several questions on the blank, but if, from the appearance of the applicant, or the answers given to the questions, or from the manner in answering the questions, he is led to feel that the questions do not bring out all the facts in the case, he should either add to those questions, or under space for remarks, give full details, or by a separate communication convey to the Medical Director his impression as to the physical and mental condition of the applicant. He must also remember that if his examinations are carefully made, his impressions fully given, it will not be necessary that he be called upon to secure additional information; also bear in mind that any information given or any suggestions made are held in strict confidence. As most examiners are now aware, the company has many sources from which they can secure information, and if such information is not brought out in the examination or by the examiner, correspondence and extra service is required.

The benefits to be derived from an examination of this nature as supplemental to the questions contained in the examination blank cannot be lightly considered. This is especially true in instances where the applicant is trying to conceal his real physical condition in the hope that he will be accepted. A close scrutiny of the applicant undoubtedly, in many instances where fraud is attempted, will suggest the existence of disease, which suggestion, if followed might result in the rejection of the risk, and in saving the company from paying a claim on an impaired life.

It sometimes happens that after the Medical Examiner has strongly recommended an applicant as a first-class risk, the application is declined and, inasmuch as the reason for such adverse action cannot be disclosed, the examiner should not be unduly concerned on that account. There are so many sources of information available to the company, besides reliable statistics bearing on the case that this action is occasionally necessary and the examiner cannot be expected to acquaint himself on these points. If after obtaining answers to all questions on the blank and supplement-

*Read at the meeting of the Southwestern Virginia Medical Society at Wytheville, September 13 and 14, 1922.

ing the answers thereon with whatever he thinks of importance, the examiner carefully makes his recommendation it will be fully considered with all the other facts bearing on the case.

At the present time no business is making greater progress than life insurance, nor is any receiving more attention from the general public, consequently the various companies have found it necessary to get closer together, and for their mutual protection are exchanging information regarding all branches of their business. This requires keeping many and careful records relating to the applicants, agents, and Medical Examiners, rating particularly the services of the latter as to their ability and conscientious work, and their desire to build up the company by helping the agent, or safe-guarding the company's interest in any way. By helping to build up the company, they not only assist the agent and increase their own practice, but they also assist their community by encouraging thrift.

There are many determining factors to be considered in the selection of any insurance risk. Among them. and perhaps the main ones are: Age, Occupation, Habits and Morals, Build. Family History, Personal History, and Physical Condition. It must be understood in assessing the value of any one of these, the Medical Director must give consideration to the modifying influences of other conditions, and that he must have the cooperation of the Examiner. Age as a factor must be viewed intelligently and the quality of the risk determined by the family history, medical history and physical condition. In the functional and physiological decline of life, persons are more prone to degenerative diseases such as carcinoma, arteriosclerosis, chronic nephritis, and others; hence, the value of an intelligent survey of the problems affecting a risk at different ages. The functional degenerations that come in later years are often concealed and require careful physical examination to detect them. I refer particularly to the cardio-vascular renal diseases. Blood pressure taken properly, especially the diastolic pressure, is one of the best methods of detecting a concealed impairment due to vascular and renal trouble; therefore, when the blood pressure is other than normal, the Examiner should immediately, either by questioning the applicant, or by taking into consideration information already given by the applicant, do his best to locate or determine the cause for the abnormal blood pressure.

The effects of occupation on the health of the applicant should be given careful consideration, and especially if he is engaged in an occupation where he is exposed to certain chemicals, extreme heat or cold or to weather conditions, any effects that could be had on the prospect should be carefully observed and any indication of a breaking down at any point from such exposure should be noted. Also, in asking the question as to occupation, the Examiner should at all times try to ascertain if the prospect is engaged in more than one occupation and, if so, specify how much time is given to each.

The moral hazard is one that is very often overlooked. If the Examiner resides in the same locality, and he generally does, he should endeavor to call to mind any incident, however small, that may have come under his observation as to the applicant's mode of living, his surroundings and his personal standing in the community. It was hoped that the prohibition of spirituous and malt liquors would remove the questions as to the applicant's habits in respect to his indulgence in that direction, but under present conditions, in many localities, it has added to the Medical Director's burdens. Therefore, the Examiner should question the applicant closely as to his indulgence at the present as well as in the past. If he has been addicted, he should be carefully examined for any indications of any effect such indulgence may have had on his physical condition.

If the family history shows a tendency towards certain physical conditions, the examiner should be very careful to look for such in the prospect. The family traits are important in determining the hardiness and longevity of an individual. When a Medical Director notes that an applicant's parents are dead at an early age and that they died from some chronic functional disease, that his grandparents died young, he must be impressed with the fact that the applicant's tree indicates short life. I am not referring here to the question of inherited diseases, because they are few, but rather to the biological conditions of mankind that are hereditary and count as a factor in longevity. We cannot deny inheritance of stature, of appearance, functional similarity, racial type, and mental and nervous traits. We cannot deny the in-

heritance of form and tissue that do not furnish sufficient resistance to avoid certain types of functional diseases. As an example, certain nervous diseases and manifestations are known to develop in particular families in succeeding generations. Among these are chorea, migraines, asthma, epilepsy, hysteria and other psychoses, and functional degenerative diseases, such as diabetes and cardiovascular renal disease.

The question of overweight or underweight is one where the Examiner can be of great aid to the Medical Director in passing on the risk by questioning the applicant closely as to the family characteristics on this line, and while it does not always follow that if it is shown that the members of the applicant's family are either over or under the average, that the applicant should be either over or under the average, at the same time, there is no question that it helps if the facts are brought out.

The medical history of an applicant is the next important factor, and is perhaps one of the most difficult things to interpret in our review of examinations as we receive them from the Examiners. Too often the Examiner does not understand the necessity of delving into the medical history of an applicant and, therefore, his indifference leads the applicant to forget that he had been subject to a certain type of ailment in the past that might have an important bearing upon his condition, as a standard risk.

There are other points in connection with the physical condition which might be mentioned at the present time. It occasionally happens that an examination discloses an impairment of the heart, lungs, stomach, or some other organ. Now that the majority of companies are handling sub-standard business, it is possible to give quite a large number of such impaired risks insurance at increased rates, and this also includes those whose personal history shows that they have suffered with rheumatism, asthma, renal or hepatic colic, appendicitis, and such major surgical operations as removal of kidney, gall stones, gastro-enterostomy, etc. But it is necessary in these cases to give the very fullest information. An insurance company now-a-days does not fear an impaired risk, but they do hesitate over incomplete information suggesting an undisclosed impairment.

In the foregoing, I have tried to show how important the work of the Medical Examiner is, in fact, how vital it is to the progress of the company. If the present high standard is maintained by them, the company will continue to show a favorable mortality, thereby strengthening their position which is for the benefit of all. If the bond between the Examiner and the company can be drawn closer, it will undoubtedly mean much to both.

PREVALENCE OF UNSUSPECTED CHRONIC MAXILLARY SINUS INFECTION.

By E. TRIBLE GATEWOOD, M. D., Richmond, Va.

Incidence of Latent Types. Sequel to Many Chiest Infections. Relative Value of Diagnostic Methods.

The object of this paper is to emphasize the present day prevalence of chronic maxillary sinusitis accompanied by obscure symptoms which are frequently overlooked in the search for foci of infection.

Incidence of Chronic Latent Types.

The word "latent" is used to denote those infections that do not stand out with the usual frank symptoms, but rather assume the obscure type of antral disease. The incidence of this infection is found to be rather high if a diligent search is made, due, in part, no doubt, to the recent epidemic of influenza in which the nasal accessory sinuses appear to be peculiarly vulnerable.

In recent years the extensive employment of roentgen ray examination has emphasized the frequent occurrence of dense antral shadows which showed by further investigation to be the result of infection.

Many infections can be traced to improper extraction of teeth with its aftermath treatment. The Mayo Clinic has recently reported 100 cases of such origin. The careful exodontist, however, discovers a large per cent. of these cases that present themselves for examination, when, in reality, the teeth are sound and are only secondarily irritated by close proximity to the inflamed antral membrane.

The present day swimming pools, especially during the epidemics of acute upper respiratory infections, have been a frequent source in disseminating this infection in the cities.

The increasing desire of the laity is to avail themselves of a general physical examination, at which time they usually pass through the office of a rhinologist who does not consider his

work complete, without at least, a thorough inspection of the sinuses checked by X-ray plates, and considered only when correlated with the patient's local and general clinical findings.

Sequel to Many Chest Infections.

The importance of these chronically infected cavities lies in the constitutional or remote symptoms resulting from them. Many patients make no complaint of localized discomfort whatever, and will frequently give an entire negative history from this standpoint. Complaints of one or more constitutional symptoms, such as arthritis, neuritis, mental, gastric, respiratory or urinary disturbances, have been so constantly present in many of our patients suffering from this type of infection, that I feel we should exhaust every means known to exclude the sinus before charging the symptoms to other sources. While we are not able to discuss in detail all of the various symptoms which so often accompany this malady, I think emphasis should be stressed in regard to gastric and respiratory complications.

It is not definitely understood why a large per cent of patients suffering from chronic sinus infection present themselves for a general examination to the internist with the predominating complaint, "digestive disturbance." The feasibility of this complication may be explained when one considers the effect upon the digestive tract of constantly swallowing pus from an antral cavity over a period of months or even years. It has been shown the number of bacteria in the stomach at any time depends almost entirely upon the saliva swallowed.

Because of the lack of appreciation of sinus-bronchus disease as a common clinical entity, it is desirable to emphasize the following points:

That antral infection and acute bronchitis may develop simultaneously is hardly to be questioned, but the cases that are infrequently recognized are the obscure types, causing no local symptoms, such as headache, pain or appreciable nasal discharge.

A large percentage of patients suffering with chronic bronchitis and bronchiectasis will usually be found to have a sinus infection and the degree of infection is often in proportion to the sinus involvement.

The bacterial flora from the sinus is invariably the same as the sputa.

Many systems of medicine make no mention of sinus infection in connection with bronchiectasis. Mullens, of Colorado, reports fourteen cases, showing lantern slides of radiographs of sinuses and chests. Six of these cases had actually been treated in tubercular sanatoriums. Judging from the number of patients suffering from respiratory infections that are never advised to avail themselves of a sinus examination, it is a question whether the internist realizes the importance of chronic antral infection and its significance in relation to chest diseases.

That sinus-bronchus disease was frequently mistaken for pulmonary tuberculosis in the world war is pointed out by Lawrason Brown in a recent article in *The Journal of the A. M. A.*

The popular idea that such nerves as the optic, musculo-spiral and sciatic are peculiarly susceptible to bacterial toxins may or may not be true, though the enlargement of the blind spot with contracted fields of vision is quite suggestive of a posterior ethmoidal infection. On the other hand, there may be pressure exerted upon spinal nerve roots due to hypertrophic spinal arthritis caused by an unrecognized antral suppuration, which, in many cases, simulates true neuritis or visceral disease.

The author feels safe in bluntly stating there is no one diagnostic method which is conclusive. In a large majority of cases we are called upon to use every means available before being able to announce to our patients definitely the exact condition existing. To find pus in the nasal cavities only suggests a general sinus infection, but not the specific sinus which is all important if one wishes to combat this malady with an earnest scientific desire. To map out the sinus which is infected and those which are not affected requires some little time and study. Very often the patient has not the slightest inconvenience about the head, and inspection of the nasal cavities reveals a normal appearing mucous membrane and surrounding turbinates. These types of cases are seldom seen by the average rhinologist, unless the patient is referred by the internist for special study, as the patient is seeking relief for some remote symptom which is apparently independent of sinus infection, but, in reality the underlying cause.

The common opinion that tooth infections

cause a large percentage of antral infections is, no doubt, true, but one rarely sees in literature that chronic antral infections following repeated attacks of coryzas and grip in lieu give rise to apical infections; this may be especially true when recession of the antrum is deep, contributing to thinness or absence of bony separation.

Relative Value of Diagnostic Methods.

The methods of recognizing antral infections may be summed up in order of their proper study into the following:

Personal history, inspection, palpation, aspiration, trans-illumination, X-ray and irrigation.

Personal History: Pain, headache, discharge and fulness over the cheek are the commonest symptoms complained of. This is often of value in determining the probable age of the infection and that some variety of sinus infection does exist. It has been the writer's experience, however, that statements made by the patient are frequently of little importance, since with these obscure infections there is no history of local discomfort whatever.

Inspection of the intra-nasal spaces may prove extremely helpful, should there be an abundant expulsion of pus from the antral cavity into the middle meati. On the other hand, the failure to discover anything abnormal by means of inspection, will in no way exclude antral disease. The appearance of hypertrophied lymphoid tissue on the pharynx lying in a vertical streak immediately behind the posterior pillars is invariably indicative of some type of chronic sinus infection.

Aspiration is only helpful in diagnosing sinus infection in a general way, but of no help in typing the individual cavities.

Trans-illumination is of more help in diagnosing chronic antral infection than any other type of sinus disease. I have learned never to depend upon it alone; an equal shadow means nothing; an unequal shadow only suggests further investigation.

Palpation is only helpful in the acute cases, and even here, cannot always be depended upon. Apparent tenderness on firm palpation may prove pronouncedly misleading in the patient of neurotic temperament, who, through fear of being hurt, elicits signs of discomfort.

Roentgenology is a valuable supplement to clinical findings, and when so combined, error in diagnosis is reduced to a minimum. To depend upon the X-ray alone in all cases is as wicked as not to depend upon it at all; so obviously is this true that Dr. Frederick M. Law, whose work in this particular field is as luminous as voluminous, has said, "It is necessary to know the history, clinical findings and symptoms before attempting a radiographic diagnosis." I have repeatedly contended that the rhinologist should, at all times, study the plates and correlate the interpretation with the clinical evidence. No matter how competent the roentgenologist may be, or how perfect the technique, there are times when interpretation will be only a matter of opinion, and sometimes an imagination rather than a fact. We have had patients referred for treatment with a fixed diagnosis, based upon the X-ray plates alone, and by further investigation the sinuses proved to be innocent; and again, we have repeatedly operated, basing our diagnosis upon theX-ray findings and history exclusively (knowing, of course, our plates to be perfect in technique). While our series of such cases are not large, we have yet to fail to be supported in our diagnosis by operative inspection, as well as microscopic tissue examination by a competent pathologist. The failure to personally study and visualize from the X-ray films variable anatomic relationship the sinuses hold to other vital structures before operating, is only to invite an occasional disaster to the patient and reproach to yourself. Radiography of the sinuses is a shadow transposition of differential densities of the bones of the skull, and is, consequently, modified by certain diseases and normal variations—such as age, sex, thickness of skull, asymmetry and angle of exposure, all of which must be taken into consideration. In reading antral and upper tooth films, one of the most frequent errors is the interpretation of the relationship the tooth root bears to the antral floor. This fact cannot be definitely stated from the X-ray standpoint alone, for the film appearance is dependent upon the angle at which the film is taken and the position of the tooth root as well as the anatomy of the antral floor, all of which cannot be outlined in detail.

Diagnostic Lavage: To prove or disprove the existence of pus macroscopically in the antrum brings us down to the sheet anchor procedure "lavage"; conclusive evidence of active infection can be obtained by the expul-

ion of pus from the cavity, but the failure to observe pus in the washings does not, by any means, exclude infection of a latent type with a definitely diseased membrane supplying the system with a most virulent toxemia. In diagnosing such types of infection, one has to rely entirely upon the X-ray shadow, which is invariably definite, providing the technique is 100 per cent. perfect. Puncturing the antrum as a routine without a definite indication cannot be too strongly condemned; as it, no doubt, occasionally leads to an infection of an innocent cavity, in spite of careful asepsis.

Antral Exploration: This procedure cannot be included as a common diagnostic method, for the act in itself prohibits such. There is, however, a very small group of cases that require an exploratory operation before a positive diagnosis is possible. The question arises: "Are we justifiable in such?" Emerson, of Boston, says: "In every case of long standing, polypoid degeneration of the ethmoid labyrinth, operative interference should be followed by inspection of the antrum on that side." I cannot agree with this statement because we know every case of chronic ethmoiditis with polyps is not necessarily accompanied by antral disease. However, if repeated roentgen ray plates are dense and the antral lavage returns clear or with a mucoid substance and accompanied by a history of persistent attacks of either rhinorrhea, bronchitis, asthma, neuralgia or unilateral eustachian infection, we are justified in opening the anterior wall and inspecting the cavity. It is my belief that chronic ethmoiditis is not a constant existing factor in this group of cases. When nasal inspection is negative and patient gives a history of either repeated attacks of vaso-motor rhinitis, unilateral tubal infection, persistent chest signs with negative sputa, or asthma of an undetermined origin, one should consider very seriously latent antral infection. If the patient gives one or more of the above symptoms and the roentgen plate shows a constant density even though the antral lavage is macroscopically negative, we are justifiable in exploring this cavity, with the idea of removing definitely diseased tissue. I can recall cases from my previous private and hospital experience that manifested symptoms and findings as described, that were regarded at that time as innocent organs.

Conclusions.

That the incidence of chronic antral infection is, for reasons stated, greater than supposed.

That many infected antrums go undiagnosed is because subjective and frank objective symptoms are frequently absent.

That all chronic respiratory infections with a negative sputum call for a thorough sinus investigation.

That roentgen ray plates are of definite diagnostic value only when correlated with patients' clinical findings.

We are seldom justifiable in making a diagnostic puncture of the antrum without first availing ourselves of the necessary X-ray studies.

We are justifiable in making an antral exploration in certain selected cases when all other diagnostic methods are uncertain.

Professional Building.

Correspondence

Roads, From a Country Doctor's Standpoint.

To The Editor:—

Now that it seems settled that there is to be no Bond Issue and that our roads must be built, if built at all, by a "direct tax," why may not our Legislature be called together in extra session and put this "direct tax" directly where it should be, that is on the automobile? The automobile is the thing of all others that has caused all this demand for Good Roads, the thing that is most benefited by Good Roads, and the thing that wears them out after they are built. Therefore, the automobile should pay for the Good Roads.

While wearing one automobile out, I usually succeed in making about money enough to pay for the next one. A new Ford machine costs between $400 and $500 (according to equipment) and, after two years' use in the practice of medicine, "trades in" on the next new one for about $140. And I believe it is conservative to say that repair bills, during that two years, incident to bad roads, are double what they would be if we had improved roads, such as they have in Maryland, for example.

Now, from the above figures I deduce that, if by paying $26.40 annual license tax, instead

*From a recent issue of the Warrenton (Va.) Times.

of $13.20, we could, in a reasonable time, get sufficient improved roads to make the machine last four years instead of two, it would save me money, to say nothing of the comfort of having better roads to travel over.

Recently, the Fauquier County Health Department was abolished because it cost something in taxes to maintain it. The tendency of public opinion, not only in the county but over the State generally, seems to be at the present time to abolish everything that costs anything in taxes. Reasoning along this line, would it not be good economy to abolish the Legislature? Certainly our last session has little to which it can "point with pride" except the things it prevented, or did not do, and no Legislature could do nothing about as effectively as our last session did, and furthermore, would cost the State nothing. Sounds logical, but unfortunately, consistent with good government, there is a limit to this 'tax reducing," "do nothing" policy.

A Legislature, sent instructed to do nothing except reduce taxes, can accomplish nothing constructive, as was practically the case with our last session. The law is an imperfect instrument which needs constant adjusting and readjusting to suit changing conditions. The War, for example, necessitated many new laws and new taxes most of which have been abolished, thanks to our Legislatures, State and National. However, in revoking these laws and taxes which are no longer necessary, it becomes the function of the Legislature to seek a "sane middle ground" and not let the pendulum swing too far in the other direction because, if carried far enough, this policy would result in the abolition of all taxes, law, order and government, or, in a word, Anarchy.

I believe that a majority of our people in Virginia are willing to pay sufficient taxes to build and maintain good roads such as they have in other states, if the taxes are put in the right place.

I am aware that some automobile owners would object to having the license tax increased, particularly those living in the cities. But there is nothing new in this. There have always been some people who would like to have some one else pay all the taxes and, perhaps since the first city was built, the City Dweller has been trying to put the big end of the taxes over on the country man. It is true that city people are taxed by their city governments for the up-keep of their streets but to compensate for this the Legislature releases them from paying the ordinary road taxes that all property owners outside of city limits have to pay. And as city automobile owners are allowed to and do travel a great deal over the country roads, it is but fair that they should pay their proportion of the tax. An automobile owner who prefers to go on running his machine over unimproved roads because the improved roads cost more, is as "penny wise, pound foolish" as the farmer who continues to cut his wheat with a cradle because the binder costs more.

So, I ask again, why not get together and put this "direct tax" where it should be, that is on the automobile? It may not be necessary to double the present license tax, but increase it sufficiently to build and maintain a good Highway System in a reasonable length of time.

The advantage of this tax over the proposed tax on gasoline is that it is more direct and would not work an injustice on farmers, millers and mechanics in purchasing gasoline for their stationary engines, tractors, etc. Also that automobiles propelled by steam or by any other force would not escape the tax.

And any automobile owner who may object to this tax may at any time relieve himself of it very simply—i. e., by getting rid of the autombile.

RICHARD MASON.

The Plains, Va.

Human Actinomycosis.

Mayo Clinic.
Rochester, Minn.
December 7, 1922.

TO THE EDITOR:

I am endeavoring to make a complete study of the distribution of human actinomycosis in this country. The number of cases reported in the literature is surprisingly small, and I know that the disease is not so rare as is sometimes thought. I shall greatly appreciate hearing directly from any one who has had experience with this disease, and desire to know concerning case histories the following: age, sex, occupation, residence, state in which the disease was contracted, location of lesion, duration of symptoms, and any special points of interest connected with the treatment, outcome of the disease, or necropsy findings.

A. H. SANFORD, M. D.

Analyses, Selections, Ect.

The Patency of the Fallopian Tubes Ascertained by Transuterine Injection of Fluids.

A paper was read by Dr. I. S. Stone with the above title at the recent session of the Southern Surgical Association held at Memphis, Tenn., December 12, 13, and 14, of which the following is an abstract.

The first trial of the method was made during an operation for acute infectious salpingitis and appendicitis with extensive peritonitis. As it was essential that the patient should not be unsexed, we determined to practice conservation even at some risk. At that period (1896) it was the rule to excise every tube which contained pus and many operators removed both tubes and uterus if pus was discovered in one tube. The right tube and ovary with the badly involved appendix were removed because they were necrotic and hopeless, but the left was not so much damaged and was allowed to remain although it was in the stage of free discharge before the fimbria had closed in and sealed it. The cervix was held with a tenaculum forceps and a large glass syringe was used to inject the uterus and tube. The force used was firm hand pressure upon the piston of the syringe. As the tube lay upon a sponge over the incision, we were pleased to see a fairly good stream of the solution escaping from the distal end of the tube. After flushing the tube thoroughly it was dropped back as is usually done and the wound closed. The solution in the first case was bichloride of mercury 1-1000, but later we relied upon iodine in watery solutions of the tincture 1-2000. Although this practice has been used many times in Columbia Hospital in this city when it was desirable to leave an ovary and tube in some borderline case, not a single accident has occurred and all patients have made easy recoveries. We have also used the method in the investigation and treatment of sterility, having had a complete success in a recent case which had resisted treatment for many years. The patient conceived soon after leaving the hospital and in due time was safely delivered.

The method involves an inspection of the tubes through an abdominal incision, bringing the annexa outside of the incision where they are to be held upon a gauze sponge and the injection given by a competent assistant. In a number of instances we have failed to inject the tube as we could see no evidence of the usual stream or even drops of fluid escaping from the pavilion. It is quite possible that much benefit may follow the application of antiseptics to the proximal end of the tube and isthmus, a region which has hitherto been considered beyond our reach.

Kidney Function.

Alfred N. Richards, Ph. D., in *Am. Jour. Med. Sci.*, CLXIII, No. 1, January, 1922, p. 1, states that the glomerulus is the chief site of fluid elimination in the kidney. Using apparatus with which it is possible to perfuse *in situ* the kidney of an animal, Richards and his co-workers have brought forward additional proof of the filtration theory as opposed to the "vital" or "secretory" theory of glomerular function. They contrived to alter pressure within the vessels of the perfused kidney without alteration in volume flow, or velocity of blood. They concluded that the increased urinary flow obtained was, therefore, attributable to raised blood pressure. Richards believes that in previous experiments in which venous obstruction causing increased pressure resulted in *diminution* of urine, the result was due to coincident stagnation of blood in the glomerular capillaries.

It was found that certain constrictor agencies, as adrenalin and pituitrin, in small dosage resulted in greater constriction of the efferent vessels; increase in urine by increased glomerular pressure; swelling of the kidneys by distention of the glomerular capillaries. Large doses of adrenalin result in constriction of both afferent and efferent vessels, and suppression of urine. Again, substances such as water, urea, and caffein, which are dilator, acting first upon the afferent glomerular vessels, and in part passing out of the circulation with the urinary filtrate, result in increased intraglomerular pressure and diuresis.

"If we regard the renal arterioles as very sensitive both to constrictor and dilator substances, as they most certainly are, and if we admit the possibility of such preferential action as I have indicated on either efferent or afferent vessels, we must see in this a very delicate mechanism whereby intraglomerular pressure, and hence the first formation of urine, is regu-

lated in accordance with the chemical composition of the blood."

The number of glomeruli and tubules in the human kidney is estimated at 2,000,000. Not all are active at the same time. Direct microscopical observation of the frog's kidney enabled Richards to study the blood flow through the glomeruli and the effects of various substances introduced into the blood as they affected the number of glomeruli seen to be active at one time. Wide variations were noted in the number before and after the injections, e. g.:

Hypertonic Sodium Sulphate (5 per cent.): 0.1 c.c. Before, 6 active, 0 inactive, total 6; after thirteen minutes, 51 active, 0 inactive, total 51.

Adrenalin constrictor dose, 0.1 c.c., 1 to 100,000: 3 fields; before injection, 49 active; immediately after, 12 active; seven minutes later, 48 active.

Just as all the glomeruli in a kidney do not receive blood at once, so too in a single glomerlus not all the capillary loops need be patent at one time. The flow may also be intermittent. Of two adjacent glomeruli, blood flow may stop in one and not in the other. The interruptions bear no relation to the heart beat. At times, from influences outside the kidney, all or many may stop. But there must also be a local (glomerular) regulatory mechanism, as also of the afferent and efferent vessels. The capillaries within the glomerulus probably have independent contractile power, since the blood corpuscles fade from view after the flow stops. There are evidences of difference in tone of these capillaries. These observations make it easier to understand variations in the composition of urine. Richards thinks albuminuria may occur due to causes not far removed from the physiological, that is, from increase of the normal intermittent cessation of blood flow.

J. H S.

An Ocular Sign of Syphilitic Infection.

At a recent clinical meeting at Warsaw, Dr. A. Chelmonski, Revue de Medicine, March, 1922, read a paper in which he described and demonstrated with his patients what he claims to be a new sign of syphilitic infection. Having remarked something unusual about the eyes of his tabetic patients he decided to analyze this expression and determine if possible its significance. At first he thought it might be due to the failure of the pupils to react to light, but this hypothesis had to be abandoned when he made the further observation that the same expression was characteristic of primary and secondary cases.

A careful examination of the peculiarities of these abnormal eyes revealed the following characteristics: Pupils which react somewhat more sluggishly than normal both to light and to accommodation; sometimes an oval outline; the tracery of the iris is smudged, often unequally, in the two eyes and the iris appears to have lost both color and lustre, the latter because the anterior chamber is often extremely flattened. The optic disc is pale and the vessels of the retina may appear narrowed. Of these characteristics the most constant are smudging of the iris and the diminished reaction of the pupils to light and accommodation. (Lancet, London, August 12, 1922).

The Clinical Evaluation of the Wassermann Reaction.

Kilduffe asserts that "in the ultimate analysis, the clinical value of the Wassermann reaction is in direct proportion to the realization that it constitutes only a single method or phase of examination and that it should always be carefully correlated with and interpreted in the light of all the other findings—however obtained—in the individual patient."

It is necessary for the clinician to know what antigens are used and the degree of reaction to each. Only in this way can the reports of different laboratories be compared and correlated.

The Wassermann reaction is not specific, conditions generally admitted to give complement fixations with the antigens in common use under certain conditions are leprosy, frambesia, pneumonia, and anesthesia or alcoholism.

While it is true that the Wassermann reaction is the most constant and delicate single symptom of syphilis, it has been abundantly proved that in syphilis a single negative reaction is not sufficient nor definite evidence that a cure has been effected.

In the primary stages of syphilis only a small proportion of cases will react before the third or fourth week.

In the secondary stage about ninety-five per cent. of all cases are positive, and dependence should not be absolute on a single negative in this stage.

In neurosyphilis the blood Wassermann may be negative while the spinal fluid is positive. Bibliography of forty-one references. (Robert A. Kilduffe, Archives of Dermatology and Syphilology, August, 1922.)

Syphilitic Heart Disease.

Meza and Paulis believe that syphilis should be suspected in all kinds of heart disturbances, especially since Cesa-Bianchi's recent discovery of spirochetes in the heart in inherited syphilis. Electrocardiography is one of the most reliable means to detect latent mischief of this kind. (S. A. Meza and J. Paulis, Revista Espanola de Medicina y Cirugia, Barcelona, April, 1922; Journal of the A. M. A., August 12, 1922.)

Progress in Syphilology.

Cheever summarizes the striking developments (in syphilology) of the past year.

Three cases of syphilitic infection during labor have been reported by Lemholt. Typical chancres developed on the infants' heads, followed by typical acquired infections.

There have been increasingly numerous reports of reinfection.

Pinard and Leguignand report case of experimental syphilis in a man, who inoculated himself three times, producing typical chancres and typical later reactions.

Rasch reports case of girl with lenticular syphilide which failed to appear on the parts of body exposed to strong sunlight. The actinic rather than the heat rays are thought to be responsible.

Cases of neurosyphilis with negative spinal fluid are reported. Spinal drainage is effected without lumbar puncture. Corbus, O'Conor, Lincoln and Gardner inject 100 c.c. of fifteen per cent. saline solution intravenously by the gravity method, six hours later 0.9 gm. neoarsphenamin is injected. The injection of the saline solution causes an initial rise in the cerebrospinal fluid, followed by a fall in this pressure to below zero, followed by a gradual rise to normal. Apparently the increased osmotic properties of the blood plasma causes fluid to be drawn rapidly into the blood stream from all sources, including the cerebrospinal fluid.

Wile and Marshall present an analysis of 1,869 cases of syphilis on whom lumbar puncture has been done. About seventy per cent. of those having pigmentaries of the neck had neurosyphilis, seventy per cent. of those having iritis had neurosyphilis, and fifty per cent. of those having pigmentaries of the neck had neurosyphilis also. About thirty per cent. of the cases of late syphilides of the skin, bones, and viscera, had definite central nervous system involvement.

That the latent syphilitic can be a carrier seems to be indicated by the fact that living treponemata have been isolated by rabbit inoculation from inguinal glands and semen. Klauder and Kolmer found all transudates and exudates positive to Wassermann test—tests with secretions were not uniformly positive.

Reports during the last year by American syphilologists have not been especially favorable to silver arsphenamin.

Hesse suggests that the beneficial effect of sunlight in tuberculosis argues for the same good effect in treatment of syphilis.

Levaditi reports the value of bismuth salts in the treatment of syphilis. Tartrobismuthate of sodium and potassium suspended in oil has been put on the market under the name of trepol.

A recent investigation reports that there is no advantage in mercury inhalation. (Austin W. Cheever, (References), Boston Medical and Surgical Journal, August 10, 1922.)

The Limitations of Intravenous Medication.

Read at the Seventy-third Annual Session of the American Medical Association, May, 1922. Voegtlin points out that intravenous medication is not necessarily superior therapeutically to other modes of drug administration, and also that there are numerous possibilities of injury to the patient inherent in this method. In the case of arsphenamin, the intravenous method was chosen in order to avoid local reactions. Author recommends the subcutaneous injection, which by reason of its simple technic, would make it possible to put a larger number of syphilitics under treatment, as many physicians who have not the required experience with intravenous treatment, can use the simpler treatment, if necessary under the general supervision of an experienced syphilologist. (Carl Voegtlin, Journal of the A. M. A., August 5, 1922.)

The Metastatic Complications of Gonorrhea and Their Treatment.

Fraser discusses those conditions which are

due to the spread of the gonococcus in the blood stream.

The first essentials in treatment of these conditions are the eradication of the focus of infection, which is invariably found in the genito-urinary tract, and the prosecution of energetic local treatment. Next in importance is the administering of chemotherapy and vaccines. Author recommends intramine and trimine as superior to the proteins used. There is no serious rise of temperature and no acceleration of pulse rate subsequent to the injection of these two drugs, as is the case with foreign protein. In conjunction with the chemotherapy, vaccines are administered. Detoxicated vaccines are of high therapeutic efficiency when given in large and steadily increasing doses at four-day intervals. Vaccine with a high endotoxin content should be administered in small daily doses. (A. Reith Fraser, Journal of Urology, July, 1922.)

Gonococcus Septicemia.

The intermittent fever persisted during ten months, unmodified by treatment with colloidal metals, antimeningococcus serum, autohemotherapy and quinine. But it was arrested at once with an autogenous vaccine. The robust man of thirty-five had never presented any skin or joint or viscera complications, and the diplococcus found in the blood could not be cultivated, but the first onset of the fever had been during the decline of acute gonorrhea with orchitis. Bloch and Sergent have each reported a similar cure in a case of meningococcus sepsis. The autogenous vaccine may induce a curative shock, without specific action. (J. Tapie and M. Riser, Bulletins de la Societe Medicale des Hopitaux, Paris, June 2, 1922; Journal A. M. A., August 26, 1922).

Reinfection with Syphilis.

Carle discusses the condition under which reinfection can occur. It is becoming more and more frequent every day. He published in 1921 a case of unequivocal reinfection after treatment with mercury alone, and as early as 1901 he had observed a number of cases of reinfection. He here describes two new instances, and reiterates that the biological laws are not mathematical laws; their equations contain imponderables which we are unable to seize. We have all seen secondary phenomena develop six months after the most thorough treatment, and, on the other hand, have seen a new primary chancre develop after most inadequate treatment. We need not despair of the future of the patient even if he has been dilatory in applying for treatment, and we must not discard the idea of a reinfection because we know of the thorough treatment. Another fact brought out by this study of reinfections is that many instances of reinfection must have escaped recognition in the past. In both the cases reported here, the old syphilitics considered themselves safe from new infection. He advises warning against the danger of reinfection, especially when the man is married, to protect the wife. (Carle, Annales des Maladies Veneriennes, Paris, July, 1922; Journal A. M. A., August 26, 1922).

Proceedings of Societies

Medical Society of Virginia

(*Continued from page* 542.)

REPORT OF SECRETARY-TREASURER FOR 1921-1922.

Present membership of the Society:	
Active members (Classes A and B)	1631
Honorary members	24
Associate members	106
Inactive—physically incapacitated	33
Total	1794
Membership gains during the past year:	
New members	85
Reinstatements	2
Total	87
Membership losses for same period:	
By death	21
Resignations	26
Dropped from rolls	27
Total	74
Net gain in membership	13

The Secretary-Treasurer made a report covering the income and expenditures of the Society covering the period January 1, 1922, to October 31, 1922. He was instructed to withhold its publication until the end of the fiscal year, when a complete report for the year could be made.

House of Delegates, November 1, 1922. Dr. E. C. S. Taliaferro, presiding. Roll call and quorum found present. The reports of the Secretary-Treasurer were ordered accepted and filed with the records of the Society with the thanks of the Society. The Secretary-Treasurer reported on the temporary arrangement made with Mr. R. H. Talley, Attorney for the State Society, and his action in the matter was unanimously approved. Informal reports were made on the activities of the various irregular cults in this state and the difficulties encountered by the State Board of Medical Examiners in prosecuting violators of the Medical Practice Act.

Motion, duly seconded, that the House of Delegates approve an increase in the annual assessment of the members of the State Society to five dollars; that assessment to cover in addition to the regular expenses of the Society, legal defense for every member of the Society sued for alleged civil malpractice and also to cover the expected expenses

incident to enforcing the Medical Practice Act. Unanimously adopted.

The Secretary-Treasurer made a report covering the liability losses of physicians of Virginia and other states as drivers of automobiles. Motion seconded, that the House of Delegates approve the organization of a company to carry this insurance for members of the Society and the President of the Society is instructed to appoint a committee with authority to arrange the details of the organization. Unanimously adopted.

The President appointed on this committee Drs. A. L. Gray, Paul W. Howle and M. W. Peyser. A unanimous vote of thanks was given Dr. J. B. DeShazo, Vice-President of the Medical Society of Virginia, for his successful efforts in getting reduced round trip rates to the Norfolk meeting.

Adjourned.

EXECUTIVE COUNCIL'S REPORT.

Paul W. Howle, chairman, presiding. Roll call and all present.

The Executive Council nominates as delegate to the American Medical Association, to succeed himself, Dr. Jos. T. Buxton, of Newport News.

For President, Dr. Johu Staige Davis, University, Va.

For 1st Vice-President, Dr. E. L. Kendig, Victoria, Va.

For 2nd Vice-President, Dr. C. R. Grandy, Norfolk, Va.

For 3rd Vice-President, Dr. R. S. Griffith, Basic, Va.,

For Secretary-Treasurer, G. H. Winfrey, and fix his compensation at $3,600.00 annually.

For Editorial and Business Assistant, Miss Agnes Edwards, and fix her compensation at $2,200.00 annually.

The Executive Council recommends to the Society the organization of au insurance company to carry the automobile liability insurance of members of the Society.

It recommends that the State Society join in the invitation extended by the physicians of Richmond to the Southern Medical Association to meet in that city in 1923.

It recommends that the State Society endorse the contemplated extra session of the General Assembly for the purpose of issuing the issue of bonds for building roads.

It recommends that the State Society formally request the State Health Commissioner that, if any medical or surgical clinics be held throughout the state, no fee be charged and the names of clinicians not be given in advertisements.

It recommends that the Walter Reed Medical Society be chartered as a component society when the county societies represented in that organization have surrendered their charters and when the members of the Warwick County Society have determined with which society they will hold active membership.

It recommends the reappointment of all standing committees with the appointment of Dr. C. E. Conrad of Harrisonburg, Va., to the Membership Committee in place of Dr. Wm. F. Driver, of New Market, who died last year.

It recommends that the thanks of the State Society be given the Shriners of Norfolk for the use of their Temple, to the Y. M. C. A. (Naval) for the use of its building, and to the citizens and physicians of Norfolk for their generous hospitality to the visiting members of the Medical Society of Virginia.

Adjourned.

GARNETT NELSON,
Clerk.

HOUSE OF DELEGATES,

November 2, 1922.

Dr. E. C. S. Taliaferro, presiding. Roll call and quorum found present.

The report of the Executive Council was read. Moved and duly seconded, that the House of Delegates approve the report, nominations and recommendations of the Executive Council. Unanimously approved.

The House of Delegates approves the appointment of a committee to consider Health Problems in Education as requested by the American Medical Association.

The House of Delegates unanimously recommends to the State Society the following to be members of the Executive Council from the state at large: Dr. Isaac Peirce, of Big Stone Gap, Va., and Dr. Lawrence T. Price, of Richmond, Va.

Invitations for the 1923 meeting of the Medical Society of Virginia were received from Roanoke, Va., and the management of the Greenbrier White Hotel, White Sulphur Springs, W. Va. The invitation of Roanoke was recommended for acceptance.

Moved, duly seconded, that the Medical Society of Virginia do some educational work in the state in matters regarding the work of irregulars. Dr. Burnley Lankford, of Norfolk, Va., was appointed a committee of one to draw up suitable resolutions covering this matter, to be presented to the society at its final meeting.

Dr. Lankford submitted the following, which was unanimously adopted:

Believing that the time has come, when in defense of the public welfare the medical profession of Virginia should make known its position with regard to the practice among the citizens of the state of the various cults of drugless and non-surgical healers, and though we realize that in so doing we lay ourselves open to the charge of self-seeking (in the opinion of the unscrupulous and unthinking), at the same time since the regular medical profession has, for a thousand years, stood for the prevention of disease and for the preservation and protection of the public's health, we of the present age and time deem it our duty to let the public know how we stand.

Therefore, be it resolved, First, That we, the members of the Medical Society of Virginia, do earnestly deprecate the absurd, erroneous, misleading, and oftentimes fraudulent and injurious claims made by these drugless, non-surgical healers and broadcasted over every community of the state in glaring advertisements. We see every day citizens of our State from infancy to old age grossly mistreated, often at the cost of their lives, by those who are not only absolutely unqualified in training, but who also willfully disregard from ignorance the established facts of anatomy, physiology, pathology and bacteriology, which facts have been established through long years of patient research by men of science, many of whom are known to history as public benefactors, and through the application of which facts, multitudes of lives have been saved and the health of millions preserved.

Second, That we plead with parents to investigate carefully the claims of these charlatans and irregular practitioners before subjecting their children to treatment by them, and that we advise all adult citizens to investigate in behalf of their own good, before submitting their own bodies for "treatments" that may do them serious harm.

Third, That we have no objection to these healers using any kind of drugless or non-surgical means of treatment, provided that they have had sufficient

preliminary education and have been properly and correctly trained in the fundamental facts of anatomy, physiology, bacteriology and the other time-established branches of the healing art, in order that they may be qualified to judge which cases are suitable for drugless or other method of treatment, and which are not.

Fourth, That this Society appoint a committee to assist in drawing up a suitable medical practice act to be presented to the State Legislature, under the terms of which all those who would practice upon the lives and health of the citizens of Virginia must show that they are properly qualified for such important work.

Fifth, That the Executive Council be requested to give these resolutions what publicity it may see fit.

Letters form the American Medical Association relative to the Volstead Law and the training of ex-service men as Chiropractors were read to the House of Delegates, and it was moved and duly approved that the House of Delegates recommend to the State Society the adoption of the resolutions as follows:

Resolution on the Volstead Act.

Whereas, The medical profession has been subjected to criticism and unfavorable comment because of present conditions associated with the enforcement of the Volstead law, and

Whereas, The results of a referendum conducted by the Journal of the American Medical Association, covering 54,000 physicians, indicates that fifty-one per cent. of physicians consider whisky "necessary" in the practice of medicine, and

Whereas, The dosage, method, frequency and duration of administration of this drug in any given case is a problem of scientific therapeutics and is not to be determined by legal or arbitrary dictum, and

Whereas, The experience of physicians, as reported in The Journal, indicates that the present method of control, limitation of quantity and frequency of administration, licensure and supply of a satisfactory product constitutes a serious interference with the practice of medicine by those physicians who are convinced of the value of alcohol in medical practice: therefore, be it

Resolved, That the House of Delegates of the American Medical Association, in convention assembled, representing a membership of over 89,000 physicians, appeals to the Secretary of the Treasury and to the Congress of the United States for relief from the present unsatisfactory conditions, and recommends that provisions be made for supplying bonded whisky, *for medicinal use only*, at a fixed retail price to be established by the government.

Resolution on Vocational Training of Disabled Soldiers.

Whereas, The St. Louis Medical Society, on May 16, 1922, by Memorial and Resolutions, vigorously protested against the approval by the United States government of the School of Chiropractic as a means of vocational training for disabled ex-service men, and

Whereas, It appears that more than 250 ex-service men from all parts of the country, seventy of whom represented the Ninth District, composing the states of Missouri, Iowa, Kansas and Nebraska, are now enrolled in one Chiropractic School in this district with the sanction and approval of the United States government; therefore, be it

Resolved, That the House of Delegates of the American Medical Association, in annual session assembled, representing over 89,000 legally qualified physicians, adequately trained in the arts and sciences (the only foundation for the recognition, control and prevention of disease), approves the sentiments expressed in the memorial and resolutions adopted by the St. Louis Medical Society, which have been submitted to this House, and hereby directs that the proper officers of the American Medical Association memorialize and petition the Federal government, particularly those officers charged with the responsibility for the rehabilitation of disabled ex-service men, and to take such action in the interest of the welfare of all the people, and also for the protection of those who honestly desire to administer to the sick, to the end that the ex-soldiers seeking vocational training, which will fit them for ministering to the sick and aiding in the recognition, control and prevention of disease, shall, at least, meet the requirements and shall receive such adequate training as is defined in the classification of Medical Schools of the American Medical Association, known as Class A, or acceptable medical schools—a standard which is approved by all right-thinking people moved by a desire for public welfare.

The members of the Executive Council were instructed to send copies of these resolutions to the members of Congress from their respective districts, and the Secretary was instructed to send copies to the two Senators from Virginia and to the respective heads of the departments of the government concerned with the administration of these laws.

The following amendments to the By-Laws having been submitted in proper form, received the unanimous approval of the House of Delegates and the ratification of the Society at its final session:

Strike out the fourth sentence in Section 1, Article 6, of the By-Laws and amend by substituting the following:

Then all the Districts and the Society at large shall be represented by the several Councillors in person; in the event a councilor cannot be present, he shall designate to the president, in writing, a member from his district or the State at large, as the case may be, who shall represent him at this meeting; and in the event there is no representation, as previously provided for, then such appointment shall be made by the President. Neither any Councilor nor his alternate shall be eligible for any office in the gift of the Society.

Article 10, add section 6:

The President and the Secretary-Treasurer of the Society are directed to see that the time and place of meeting of the Executive Council and the House of Delegates are printed in the program and to see that attendance of the members of these bodies be accurately checked.

The House of Delegates nominates for membership on the Executive Council, Dr. D. H. Mason, Ridgeway, Va., from the Fifth District; Dr. R. L. Page, Batesville, from Seventh District; Dr. Hugh McGuire, Alexandria, Va., from Eighth District.

Adjourned.

Final Session of the Society, November 3rd.

The foregoing report was read to the Society as a whole, at its final meeting and, it was moved and duly seconded, the Medical Society of Virginia do accept and ratify the reports of the Executive Council and the House of Delegates and also the reports of the committee. Unanimously adopted.

The Membership Committee nominated for honorary membership Dr. A. L. Gray, of Richmond, Va.,

and Dr. E. C. S. Taliaferro, of Norfolk, Va., both former presidents. Unanimously elected.

Adjourned.

EXECUTIVE COUNCIL—FINAL MEETING.

The Executive Council met after the close of the final general meeting and elected the following: Dr. R. L. Williams, Norfolk, Va., chairman; Dr. Garnett Nelson, Richmond, Va., Clerk.

GARNETT NELSON, *Clerk.*

(*To be continued.*)

The Seaboard Medical Association of Virginia and North Carolina

Met at New Bern, N. C., December 5-7. In spite of the great fire there, which destroyed six squares of residences, there was a large attendance and the entertainments were most elaborate. The scientific meeting was also one of the best in the history of the organization. The following officers were elected: President, Dr. Joseph T. Buxton, Newport News, Va.; vice-presidents, Dr. William E. Warren, Williamston, N. C.; Cora Z. Corpening, Suffolk, Va.; George A. Caton, New Bern, N. C., and Russell M. Cox, Portsmouth, Va.; secretary-treasurer, Dr. Clarence Porter Jones, Newport News, Va. It was decided to hold the next meeting in Newport News, Va., December 4, 5 and 6, 1923, and plans are already being made in that city toward making this session eclipse any meeting in the past.

The Southside Virginia Medical Association

Met in South Hill on December 12th, with a good number of members and visitors in attendance. A very interesting and helpful program was rendered, after which the following officers were elected for the year 1923: President, Dr. W. C. Harman, Dolphin; vice-presidents, Drs. H. M. M. Snead, South Hill; W. T. Gray, Suffolk; F. J. Wright, Petersburg; T. G. Hardy, Farmville; secretary-treasurer, Dr. R. L. Raiford, Sedley.

The local profession entertained the Association at a splendid supper given at Hotel Norden.

The next meeting will be held in Petersburg the second Tuesday in March, with Drs. Mason Romaine and W. B. McIllwaine as leaders of the subject for general discussion.

R. L. RAIFORD,
Secretary.

The Richmond Academy of Medicine and Surgery,

At its annual meeting elected Dr. J. Allison Hodges, president; Drs. Greer Baughman, J. Fulmer Bright and St. Geo. T. Grinnan, vice-presidents; and re-elected Dr. Mark W. Peyser, secretary; Dr. E. H. Terrell, assistant secretary; Dr. Howard Urbach, treasurer, and Dr. E. C. L. Miller, Librarian. This makes the thirtieth term for which Dr. Peyser has been elected secretary and he served as assistant secretary for two years previous to his election to the office of secretary. This is but a small testimonial of the esteem in which Dr. Peyser is held by his confreres and expresses the appreciation of his most excellent work for the Academy.

The following were elected members of the Judiciary Committee: Drs. A. L. Gray, McGuire Newton, W. H. Higgins, Manfred Call, James K. Hall and P. W. Howle.

The Warwick County Medical Society,

At its regular meeting, December 12, elected the following officers for 1923: President, Dr. W. S. Snead; vice-president, Dr. C. B. Courtney; secretary-treasurer, Dr. Samuel Downing, all of Newport News. The following were elected to serve on the Board of Censors: Drs. W. F. Cooper, C. P. Jones, G. J. Williams, T. J. Kagey and J. T. Buxton. Dr. C. P. Jones was elected Insurance Trustee of the Society.

SAMUEL DOWNING,
Secretary-Treasurer.

The Lynchburg and Campbell County Medical Society,

At its annual meeting in Lynchburg, December 4th, elected the following officers for 1923: President, Dr. F. O. Plunkett; vice-president, Dr. James R. Gorman; secretary-treasurer, Dr. R. D. Caldwell, all of Lynchburg.

It was decided to hold meetings bi-monthly in the future instead of monthly, as in the past.

The Association of the Seaboard Air Line Railway Surgeons

Held its nineteenth annual meeting at Pinehurst, N. C., December 11 and 12, Dr. Vernon A. Brooks, Portsmouth, Va., presiding. The meeting was most enjoyable in every way and a number of interesting papers were read. Havana, Cuba, was selected as the place for the next meeting and the following officers were elected: President, Dr. R. B. Epting, Greenwood, S. C.; vice-presidents, Drs. J. E. Johnson, Elberton, Ga.; H. H. Bass, Henderson, N. C., and T. M. McDuffee, Manatee, Fla.;

secretary-treasurer, Dr. J. W. Palmer, Ailey, Ga. (re-elected). Drs. W. S. Manning, Jacksonville Fla., and G. S. Watkins, Oxford, N. C., were elected members of the executive committee.

The annual banquet was held at Carolina Hotel, chief surgeon, Dr. Joseph M. Burke, Petersburg, Va., acting as toastmaster. On the night of the 12th, the surgeons and members of their families left for Norfolk, Va., and on the following day enjoyed an oyster roast at Cape Henry. That evening they went by boat up the Bay to Baltimore, and, after spending the day there, returned to Norfolk by boat, from which place they went to their homes. All entertainments and trips were given complimentary as a courtesy from the officials of the Railway.

The Truth About Medicine

During November, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Nonofficial Remedies:

Lederle Antitoxin Laboratories:
Mercurializ d Serum-Lederle for Intravenous Use.

Charles Leich and Company:
Sulfarsenol.

Mallinckrodt Chemical Works:
Barium Sulphate Pure—M. C. W.

H. A. Metz Laboratories:
Benzosol.

Parke, Davis and Company:
Silvol.

Arsenobenzol-Dermatological Research Laboratories and Arsphenamine-Dermatological Research Laboratories:
These products are now marketed by the Abbott Laboratories as Neoarsphenamine-D. R. L. and Arsphenamine-D. R. L. The Council has continued the acceptance for New and Nonofficial Remedies under these names.

Propaganda for Reform.

Abram's "Oscilloclast."—This is a piece of electrical apparatus which is said to produce vibrations of varying rate. Its use is based on Abram's theory that "specific drugs possess a like vibratory rate as the diseases for which they are effective." Instead of using a drug one starts the "Oscilloclast" going, moves the indicators to the number corresponding to the vibration rate of the indicated drug and applies the instrument to the sufferer who, it is alleged, then gets the therapeutic action of the drug in question. The "Oscilloclast" is not for sale. It may be leased (for about two hundred dollars), on signing a contract that the instrument will not be opened. Within the past few months Abrams has been making bids for osteopathic patronage. The followers of the cult have not been slow to respond. The lure of the dollar and the bizarre is irresistible. Many of the lessees of the "Oscilloclast" are individuals who for years have lived in what may be called the twilight zone of professionalism, where it is difficult to distinguish between the visionary with a fad and the quack or near quack with a scheme. (Jour. A. M. A., November 4, 1922, p. 1626).

Caroid.—This is a preparation of papain (obtained from papaya). Caroid was first marketed by the American Ferment Co. and later by Mead Johnson and Co. For a considerable time the Council on Pharmacy and Chemistry had Caroid under consideration and in the end rejected the product on account of its variability. Although Caroid was found more active than other preparations of papain, examination showed that the claims for its digestive efficiency were exaggerated. Since the publication of the Council's report in 1914, Mead Johnson & Co. do not seem to have made any propaganda for Caroid. It is now being promoted by the American Ferment Co., but this firm has not requested a consideration of the product by the Council. (Jour. A. M. A., November 4, 1922, p. 1829.)

Habitual Use of Barbital.—The constant use of even small doses of barbital (veronal) affects the central nervous system. Those taking the drug habitually become much debilitated and seem less able to stand moderate doses. Death has occurred from a 3 gm. dose in addicts. In Great Britain barbital (veronal) has been classified as a poison. Many cases of poisoning occur from its indiscriminate use by the laity. (Jour. A. M. A., November 11, 1922, p. 1709).

The Pituitary Hormone.—So far the active principle of the pituitary gland has not been isolated. It is possible that the pituitary contains more than one physiologically potent constituent. Perhaps both pressor and depressor compounds are derivable from the gland structures. Abel and Rhuiller have prepared products from the infundibulum which have both vasomoter and oxytocic effects. These investigators believe that if the product is obtained in the pure state, it will be fifty times more active than histamin, and that there is but a single specific hormone in the infundibulum, and that this has both vasomotor and uterus-stimulating properties as well as a powerful effect on the kidneys. The hope of a speedy isolation of this pituitary hormone as a chemical entity is somewhat shattered by the fact that it is unstable in laboratory manipulations. (Journal A. M. A., November 18, 1922, p. 1770).

Commercial Vitamin Preparations.—No student of the subject of vitamins can fail to recognize the ridiculousness of recent attempts to supply alleged vitamin-bearing preparations as cure-alls. It is doubtful if any latent, not to say evident, avitaminosis is prevalent in this country. Nevertheless, preparations sold to supply this alleged need of vitamins should at least not be fradudent. E. P. Bailey, of the Connecticut Experiment Station, has determined the potency of some commercial vitamin preparations as compared with that of dried brewers' yeast. The report stated that apparently many manufacturers are not convinced of the efficiency of their vitamin preparations, and, therefore, have added various medicaments of established reputation in therapeutics for good measure and to ensure a reaction of some description. Bailey compared the potency of the products on the reasonable assumption that a preparation which in a 100 mg. dose does not exhibit the potency shown by 100 mg. of a good grade of dry brewers' yeast employed under comparable conditions does not justify a claim of superior therapeutic value as a source of water-soluble B vitamin. On this basis, nearly half of the advertised products failed. Others showed only inferior content of vitamin. A few of the products equalled good brewery yeast in potency and only two or three products among nearly two dozen examined showed any superiority of "concentration" over ordinary yeast. (Jour. A. M. A., November 25, 1922, p. 1846.)

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D., Editor.

G. H. WINFREY, Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 JANUARY, 1923 No. 10

Editorial

Insulin and Diabetes.

As pointed out in an editorial of the *British Medical Journal*, Saturday, November 4, 1922, the readers of Professor J. J. R. MacLeod's summary, published in that journal, beginning on page 833, on the specific treatment of diabetes, must be impressed with the thought that this work is dealing with a real scientific advance of immense importance. As is well known, previous attempts at the extraction from the pancreas of a hormone which enabled clinicians to control carbohydrate metabolism in man have been wanting in success and have fallen into disuse through sheer failure to produce results. From this fact alone, faith in the real endocrine control of the pancreas over carbohydrate metabolism has been based largely upon a long series of experiments in the hands of numerous workers, performed by extirpation and implantation of grafts of pancreas in animals.

As indicated in this editorial, the Toronto observations, "which were initiated by the brilliant enterprise and fresh enthusiasm of F. G. Banting and C. H. Best," have been expanded into a big team of collaborators working on various phases of the problem of the influence of the pancreatic hormone in carbohydrate metabolism. It seems quite certain, at least it may be reasonably anticipated as certain, that the following facts have been established, that: (1) a pancreatic hormone exists; (2) the islets of Langerhans produce it; (3) an extract of this principle of the islet is being made in a stable form; (4) the extract is capable, when injected in the body, of reducing sugar in the blood and, when used clinically in diabetes in man, tends to reduce blood sugar, urine-sugar, and acetone bodies. The possibilities of this remarkable series of observations are incalculable at this writing. The exploration of this new field of physiological thought offers the possibilities of the discovery of much that may redound to knowledge of diseases of metabolism and their management.

One can not read Dr. MacLeod's "guarded statement" of the physiological and therapeutic effects of insulin, without experiencing a quickening sense of enthusiasm, notwithstanding the affront such an emotion may inflict upon one's sense of scientific caution, due to be functioning always in all scientific minds. The writer begs to be forgiven if he oversteps the bounds of scientific caution when he says that it appears in these remarkable developments that the physiological laboratories of Toronto have given clinical medicine an agent for the alleviation and control of diabetes in man. The recent advances in the dietary management of diabetes and the introduction of insulin as an aid in the more complete metabolism of carbohydrates should give practitioners, with training in the management of this disease, with the aid of laboratory and hospital assistants, an unprecedented opportunity for more successful work in this field.

The editor of the *British Medical Journal* proceeds in this wise: "The method of producing active solutions of 'insulin' and of gauging their activity would appear to call for much further investigation before any institution, scientific or commercial, could safely promise regular supplies of a satisfactory and uniform preparation." "Any wide extension of the treatment before such regular supplies can be guaranteed would involve real cruelty and possible danger to the sufferers, and impair the credit of the discovery with the public."

Again, he writes, "Under expert supervision, in clinics where diet and dosage can be accurately adjusted and effects controlled by regular skilled analysis, results of high promise

have been obtained in Canada and the United States." "It is imperative, moreover, that any such extension of the treatment beyond organized experimental clinics shall be made under conditions giving the strictest scientific control of the preparations supplied to the profession. The authorities of the University of Toronto, realizing this necessity, have taken steps to protect the process of manufacture."

Preparation of Insulin.

Since the extract used by Banting and Best caused a certain degree of local irritation, it was found necessary to attempt to find a method by which it could be produced in less irritating form. Collip accomplished this by a method of fractional precipitation with alcohol and this method is essentially used now in production of insulin in larger amounts.

The next step in the procedure was the inauguration of a method for testing the potency and reliability of insulin as to dosage. This was done by finding that insulin was capable of lowering the percentage of blood sugar in normal rabbits. The rate and the degree of hypoglycemia depended on certain conditions, but finally it was "found to be satisfactory to consider as one unit the amount of insulin which, on subcutaneous injection, can lower the percentage of blood sugar to 0.045 within four hours, in a rabbit weighing about 2 Kg., from which food has been withheld for sixteen to twenty-four hours." (MacLeod). This was taken as a unit for the reason that it was found in these experiments, the rabbits displayed a "highly characteristic symptom, consisting of violent convulsion seizures with intervals of coma," when the blood sugar was lowered to this point. Concentration of insulin was made so that, for clinical experiments, 1 c.c. represented one unit. One unit of insulin is thought to metabolize two to three grams of carbohydrate. It acts apparently in the muscle tissue, although MacLeod states that it has not been possible so far to demonstrate that "insulin would accelerate the disappearance of glucose from incubated (Buchner) extracts of muscle."

The preparation of insulin on the large scale is a story separate and apart from the foregoing comments, but the course of action chosen by the scientists, MacLeod and his associates, has been of such signal sort that a brief recital of the main facts should be made in this connection. Rarely, indeed, in the history of scientific medicine, have men proceeded, in the perfection and the distribution of a therapeutic agent of such distinctive significance and importance, with more exemplary scientific caution and spirit. Although it appeared that the "dream of ages" was, in great measure, about to be realized by the demonstration of the discovery of a practical hormone in extract form for the control of the percentage of sugar in the blood, yet these workers have taken every precaution against "an uncontrolled commercial exploitation of insulin, with the consequences of its improper use in general practice."

This was done in this way. The chief originators of the method, with highly commendable scientific spirit, applied for patents covering its production and propose to turn these patents over to the University of Toronto. The patents have been applied for in Canada, United States, Great Britain, and other countries. The University, through its committee composed of some of those who have participated in the investigation and some of its Board of Governors, has recommended that "licenses to approved manufacturers, to produce and sell it at a reasonable cost," be not "granted freely until every possible detail of the manufacture on a large scale of a preparation of known and constant potency" has been found.

So, it is evident that the profession and the public are to be protected from "a stampede," by a calm and careful group of scientific men who are determined that the scientific medicine shall not be reflected with a blot of commercialism in high places, over a product which so easily lends itself to such possibilities.

MacLeod gives the following references, which will be of interest and which speak for themselves:

1. Lepine: Le diabete sucre, Paris, 1909, p. 54.
2. Von Mering and Minkowski: Archiv. f. Exp. Path. u. Pharm., 1889, xxxi, page 371.
3. Knowlton and Starling: Jour. Physiol., 1912, xlv, 146.
4. Murlin: Jour. Biol. Chem., 1913, xv., 365.
5. Kleiner: Ibid, 1919, xl., 153.
6. Scott, E. L.: Amer. Jour. Physiol., 1912, xxix., 3.
7. Clarke: Johns Hopkins Hosp. Reports, xviii, 229.

8. Banting and Best: Jour. Lab. and Clin. Med., 1922, vii, 251.
9. Banting and Best: Ibid, 1922, vii., No. 8.
10. Banting, Best and MacLeod: Proc. Amer. Physiol. Soc., Dec., 1921.
11. Banting, Best, Collip, MacLeod and Noble: Trans. Roy. Soc., Can., 1922, Vol. xvi., Sec. V.
12. Banting, Best, Collip, MacLeod and Noble: Amer. Jour. Physiol., 1922, lxii, 162.
13. Banting, Best, Collip, MacLeod and Noble: Ibid., 1922, lxiii.
14. Hepburn and Latchford: Ibid, 1922, lxii, 177.
15. Banting, Best, Collip, Campbell and Fletcher: Canad. Med. Assn. Jour., March, 1922.

Good Roads! Good Roads!! Good Roads!!!

It is hoped that, by the time this reaches our readers, the legislature of Virginia will be in session, for the enactment of necessary laws by which funds may be secured for the State-wide building of permanent hard-surface roads throughout this old Commonwealth.

In the work of this legislature every doctor is vitally interested. There is work for the doctors of the State, in this connection, if the best results are desired. Every doctor in the Old Dominion should bring every proper pressure to bear upon the governor and the legislators in order to secure, in the near future, needed legislation for good roads. Virginia and Virginia people have suffered from the handicap of poor roads long enough. Virginia doctors, in particular, have sacrificed time, physical effort and body long enough on "impossible roads." The time has come to do something that will afford relief.

The automobile-age of transportation is established. That people or State that does not provide adequate roads for the operation of this means of communication and transportation must pay the inconceivable costly tax of retrogression. Not to go forward with sister States is to go backward. The State's honorable past is fine; the place that our forefathers have made in the history of the nation is fine; the foresight and aggression of the old time Virginians is a great heritage. This, today, we enjoy, and this heritage gives us a sense of self-sufficiency and satisfaction, but, if we of today are to keep apace even with the best progress of sister States, certainly if we are to secure for our children and leave for succeeding generations one of the prime necessities of modern life, we must settle now upon a plan for the accomplishment of this new and needed public necessity—Good Roads in Virginia.

Imagine the benefits, if you can, to this old Commonwealth, twenty-five years from now, if the highways of this State were hard-surfaced *now*. In winter and summer, rain and snow, at night or day, automobiles can be used over our State roads to transport the people from homes to churches, to schools, to neighbors, to cities. No matter what the weather condition, the products of the farms can be conveyed by automobile to the market places. The sick and injured can be reached by the physicians with reasonable promptness and without undue fatigue. The physicians in rural sections, as in the towns and cities, may, at all seasons, use automobile conveyances in the discharge of professional duties.

Under such improved system of highways there will be no danger of any such question as a scarcity of doctors. Rural doctors, with easy access to larger territory, among a clientele of a people of greater wealth, will be able to discharge their professional duties with greater ease, in a shorter time, and derive an increased remuneration.

Such a life in the towns and country sections in our State will enable physicians to do what city doctors are now beginning to enjoy—other things than all the day long plying the duties of one's calling. Rural physicians and those in small towns, in such conditions, may enjoy the freedom a few hours each day for interests of a small farm, or literary pursuits, or pleasurable diversions.

Now, doctors of Virginia, come forward in this important hour and assert your influence in behalf of Good Roads. The practical application of this appeal is to make every proper effort possible to induce representatives of the legislature to enact laws by which Virginia can secure good hard-surface roads at once.

Bust of Dr. McGuire Presented College.

On December 20th, a bronze bust of Dr. Hunter Holmes McGuire, the most distinguished surgeon of his time in the South, was presented by his family to the Medical College of Virginia. This bust was made by Dr. John W. Brodnax, associate professor of anatomy at the college and was placed in a niche on the landing opposite the front door of the Medical College, thus making the bust the most conspicuous object in the vestibule of the college building. No more appropriate location could have been chosen for the bust

of a man of whom all Virginia is justly proud and whose life may serve as an ideal for any young man entering upon the study of medicine. Dr. McGuire was renowned alike in war and in peace. He first came into prominence as surgeon in charge of the Army of Northern Virginia, during the War Between the States, and later climbed the ladder of fame until he had attained all the honors with which his profession could endow him. Dr. McGuire was founder and first president of the University College of Medicine, later amalgamated with the Medical College of Virginia, and it was in the building taken over from the former school that the bust was placed.

Hunter Holmes McGuire, M. D.,
By Dr. John W. Brodnax.

The ceremonies of presentation were most impressive, each vying with the other in his tribute to Dr. McGuire and to the sculptor—our own Dr. John W. Brodnax. The speech of presentation was made by Dr. W. Lowndes Peple, professor of clinical surgery at the college, and was received in behalf of the college by Dr. Beverley R. Tucker, professor of nervous and mental diseases.

The union of the anatomist and the artist in one person is very rare. One may search the roll of thousands of physicians and rare indeed is the artist, in drawing, painting and sculpture found. In England, Bell, Maclise, Holden, and Goodloe, and in America, Keen, Spitka and McClellan may be cited as anatomists of eminence and accomplished artists besides. While they were known to the medical profession as anatomists and physicians, they were artists as well. They made their art serve them in scientific work.

Anatomy owes much to Art; anatomy has ever been the basic study for the painter and sculptor of human form. The artist's talent of expression in drawing, in painting, and in sculpture, of the human body, must find its highest values only after the study of anatomy. So, through the history of art the relation of anatomical study and artistic expression of the human body has been very close. As artists who would develop rare perfection in the delineation of the body in art must know something of anatomy, the anatomist who would teach in the highest type anatomy is greatly advantaged if, in his soul, he is an artist who can draw and paint his dissections and demonstrations in anatomy.

So it is with no inconsiderable degree of pride that we draw attention to this rare artistic quality in one of Virginia's distinguished anatomists, who has turned for the moment from his drawings and dissections in the class room to give us in bronze the bust of a distinguished Virginia surgeon.

John Wilkins Brodnax graduated in medicine at the Medical College of Virginia in 1892. Since his graduation, he has been an active and devoted student of anatomy and anatomical studies. Before the amalgamation of the University College of Medicine with the Medical College of Virginia, Dr. Brodnax taught anatomy in the former institution; since the amalgamation, he has held the chair of Associate Professor of Anatomy in the Medical College of Virginia. For practically a quarter of a century, Dr. Brodnax has been devoting himself to the teaching of anatomy. During this time, through his accurate knowledge of anatomy, his skill as teacher, and his wonderful devotion to his work in the lecture room and in the dissecting hall, he has given a host of medical students from this and adjoining states the ad-

vantages of an unusual sort in the study of anatomy. As some one has said, "It is obvious that he who flashes an idea clearly and pleasantly by a stroke upon the blackboard will, other things being equal, best hold the attention of his audience and send them away with the best mental picture of the subject of his discourse." This is eminently true of Dr. Brodnax in his anatomy teaching.

Dr. Brodnax, long a member of the Association of American Anatomists, is gifted far above the average teacher in possessing unusual powers as an artist and a worker in sculpture. For years it has been known among his friends that he possessed these unusual gifts. His great modesty and the exactions of his long hours of teaching, demonstrations and dissections, have combined to keep far in the background the exercise of his art.

The occasion of the placing of the bust of Dr. Hunter Holmes McGuire in the college building served to draw from Dr. Brodnax this expression of his skill. The reader may judge of its high quality. The devotion and admiration which Dr. Brodnax bore his subject, Dr. McGuire, has but given him the call to indulge this highly artistic quality and has drawn him, for the all too brief moment, from his life's work in the anatomical halls, to give us the splendid bust of a great Virginia doctor.

Dr. Brodnax is a scion of an old Virginia family. Brodnax is a name that has come down from early colonial times in America. The Brodnax family is an old Kentish one, which can be traced back farther than the fifteenth century, even into the earliest English times.

Major John Brodnax, the American ancestor of Dr. John Wilkins Brodnax, was the seventh in descent from Robert Brodnax of Burmarsh. This ancestor fought in the civil wars of England, holding the rank of major in the Royalist army. He came to Virginia with a host of other cavaliers who had followed the ill fortune of Charles. He settled in York County probably about 1649, and died there in 1657. From this immigrant ancestor the family of Brodnax has come down in Virginia history with many marks of talent and intellectual attainments worthy of long English ancestry.

Dr. John Wilkins Brodnax, the subject of the appreciation, was the son of Dr. Robert Walker and Cornelia (Batte) Brodnax, and was born in Petersburg, Va., March 21, 1864. He was educated at the public schools and at McGuire's University School of Richmond. He graduated in medicine at the Medical College of Virginia in 1892. Prior to undertaking the study of medicine, he studied art under the noted sculptor, Edward V. Valentine, of Richmond, and the Arts Students League of New York. He has been a resident of Richmond since youth.

News Notes

A State Health Workers' Conference,

Which was in reality a kind of institute for those working under the auspices of the State Health Department, held a four days' session in Richmond, December 27-30, inclusive. Dr. Ennion G. Williams, State Health Commissioner, was presiding officer, and had joint meetings in the morning and sectional meetings in the afternoon. More than 100 health workers were registered in attendance. Public health nurses held a meeting in conjunction with that of the health officers.

Many points of practical interest were discussed and high tribute was paid by the visitors to the excellent work being done by Dr. Williams and his co-workers in Virginia. Out-of-State visitors were Surgeon-General Hugh S. Cumming, of the U. S. Public Health Service; Dr. James A. Hayne, State Health Commissioner of South Carolina; Dr. W. F. Draper, Assistant Surgeon-General of the U. S. Public Health Service, and former director of rural sanitation of the Virginia Health Department, and Miss Havey, director of public health nursing in Red Cross work. All of these gave talks which added much to the interest of the conference.

In the course of the conference, Dr. Williams paid tribute to the memory of Louis Pasteur, the noted French scientist, father of bacteriology, founder of physio-chemistry and inventor of bio-therapeutics, the one hundredth anniversary of whose birth came on December 27th—the first day of the conference. Exercises commemorating the birth of Pasteur were also held in various cities in this and other countries.

The Tri-State Association of the Carolinas and Virginia

Will hold its twenty-fifth annual session in High Point, North Carolina, on February 21-22, under the presidency of Dr. S. S. Gale, of Roanoke.

A comprehensive symposium dealing with almost every feature of the cancer problem will be brought to a close by a discussion by Dr. James B. Murphy, of the Rockefeller Institute. Dr. Murphy has devoted many years of study to the cancer situation, and he is able to say the last known word about cancer.

Another symposium will be devoted to pneumonia, and a number of brief papers will discuss the problem in its various aspects. This symposium will be closed by a discussion by Dr. Russell Cecil, of the Rockefeller Institute. He is more familiar than any one else in the world with the different types of pneumococci.

Dr. Henry A. Cotton, Superintendent of the great State Hospital at Trenton, New Jersey, has promised to present in the symposium on mental diseases a paper summarizing his work in the psychoses.

A number of other papers will make their appeal alike to the specialist and to the general practitioner. The secretary feels assured that the program of the approaching meeting will surpass in interest anything the Tri-State has presented for many years. Members who expect to attend the meeting should ask at once for reservations in the Sheraton Hotel, at High Point. Dr. D. A. Stanton is chairman of the committee of arrangements at High Point. He will be glad to answer inquiries, as will also the secretary of the Association, Dr. James K. Hall, Westbrook Sanatorium, Richmond, Va., and Dr. S. S. Gale, Roanoke, Va.

Health Courses at University of Virginia.

To meet the growing demand of the State for trained health officers, the Medical School of the University of Virginia is adding courses for the training of health officers and health workers. One course is open to medical graduates who may apply to the department of medicine for admission at any time for an intensive twelve-weeks' course, designed to fit the student to take charge of a county health unit and set him in the path of becoming a health officer. The other course is open to adults with the equivalent of a high school education, who, upon application to the department of medicine, will be given ten weeks of practical training to fit them for the position of sanitary inspector. Both courses are thoroughly practical. The student will be attached to the local health unit and will be called on to perform the usual duties falling to health workers in a small city or in a small community. In addition, if deemed advisable, special work may be assigned in the University Hospital or in one of the laboratories. There will be little or no class work and lectures, each student being treated more as an apprentice to the health officer. When the student satisfies the health officer, the University will recommend him to the State Board of Health, or to a town or county.

Other forms of public health instruction are being planned by the University and will be undertaken as soon as possible.

Report on Administration of Maternity and Infancy Act.

Miss Grace Abbott, chief of the Federal Children's Bureau, in her annual report to the Secretary of Labor, states that the maternal mortality for 1920 in the United States birth-registration area was the highest for all nations for which recent statistics are available, and that yearly statistics from 1915 to 1920 show an increase rather than a decrease in the American rate. Although the infant mortality rate has decreased, it is still higher than the rate in five other countries.

To date, forty-two states have accepted the terms of the Maternity and Infancy Act, twelve being by legislatures and the remaining thirty by governors, pending the next regular session of the legislatures. Porto Rico and Hawaii have expressed a desire for inclusion.

It may be of further interest to note that since 1912, when the Children's Bureau was established, the number of states having special divisions dealing with child health has increased from one to forty-six.

Reports showed that the work of both the Federal Board of Maternity and Infant Hygiene and the Children's Bureau are progressing satisfactorily.

Medical Society Buys Home.

The Fulton County Medical Society has

bought a home in Atlanta, Ga., the first floor of which has an auditorium with a seating capacity of 350. Four rooms are used as a library. The building is known as the Academy of Medicine. The upper floors will be rented to physicians as living quarters.

On the occasion of the opening of the new home, December 7th, Dr. J. Shelton Horsley, Richmond, by invitation, delivered an address on "The Relation of Biology to Surgery."

The San Francisco Meeting.

San Francisco and the California Medical Association are making extensive preparations for the entertainment in June of the American Medical Association. Dr. W. E. Musgrave has been made chairman of the local committee of arrangements and all communications, of whatever nature, should be addressed to the permanent headquarters of the committee, 806 Balboa Building, San Francisco.

Married.

Dr. William Dulaney Anderson, Chattanooga, Tenn., and Miss Rosalie Slaughter, daughter of the late Dr. Samuel G. Slaughter, of Lynchburg, Va., December 16. Dr. Anderson graduated from the University of Virginia in 1915, after which he served an internship at the University of Virginia hospital.

Dr. and Mrs. Thos. Davis

And son, of Lynchburg, Va., spent the holiday season with Mrs. Davis' parents in Richmond.

Dr. Clifton M. Miller,

Richmond, has been elected president of the Kiwanis Club of this city, for the present year.

Dr. J. B. Mears,

Of this state, who has for some time past been on the U. S. S. Arizona, with the rank of Commander, is now stationed at Naval Hospital, Mare Island, California.

Dr. Claude M. Lee,

A graduate of the University of Virginia, in the class of 1905, with his family, is visiting in Charlottesville, Va. Dr. Lee has been in China for sixteen years, where he is in charge of St. Andrew's Hospital, at Wusih, China. Mrs. Lee is a niece of Mr. W. R. Duke, a member of the Board of Visitors of the University and of Judge A. T. W. Duke, Jr., of Charlottesville. Dr. Lee expects to return to China with his family next July.

Dr. E. V. Valz,

Who has been medical commander at the Navy Yard in Charleston, S. C., for three years, in January began a tour of duty on board the battleship Arkansas. Dr. Valz has many friends in this section, as he graduated from the University of Virginia School of Medicine in 1903, and has since been a member of the Medical Society of Virginia.

The Southern Surgical Association

Held its annual meeting in Memphis, Tenn., the middle of December, under the presidency of Dr. C. Jeff Miller, of New Orleans. The scientific program was interesting and the entertainments added greatly to the enjoyment of those present. The subject of the treatment of goitre, whether by X-ray or surgery, received much discussion. A resolution was adopted which creates a senior membership in the Association. To be eligible to this, one shall have been an active member for twenty years and can only obtain it upon his own application. Senior members will be exempt from the payment of dues but will be allowed the privilege of voting and holding office.

It was decided to hold the next meeting at White Sulphur Springs, W. Va., and the following officers were elected: President, Dr. James F. Mitchell, Washington, D. C.; vice-presidents, Drs. W. Battle Malone, Memphis, and Irvin Abell, Louisville, Ky.; secretary, Dr. Hubert A. Royster (re-elected), Raleigh, N. C.; treasurer, Dr. Urban Maes, New Orleans, La.

The following Virginia doctors were among those in attendance: Drs. Chas. R. Robins and H. S. MacLean, Richmond; Hugh H. Trout, Roanoke; R. P. Bell, Staunton; and Southgate Leigh, Norfolk.

Dr. Meade Edmunds,

After a service of twelve months on the House Staff of the Manhattan Eye, Ear and Throat Hospital, New York City, has located in Terminal Building, Petersburg, Va., and will limit his work to the above named specialties.

Dr. B. M. Baker,

Norfolk, Va., after a year's absence from his

practice, has recovered his health and has taken up his work actively again.

Dr. Charles L. Bradshaw,

Until recently of Osaka, Va., is now at Crownsville State Hospital, Crownsville, Md.

Dr. John S. Lawrence

Has moved from Norfolk, Va., to University, Va., where he is associate professor of Biochemistry at the University of Virginia.

Dr. and Mrs. George A. Stover,

South Boston, Va., announce the birth of a daughter, Elizabeth McNair, on December 27, 1922.

Dr. Josiah Leake,

Churchland, Va., visited relatives in Ashland, Va., during the holidays.

Memory of Former Virginian Honored.

Honor was recently paid the memory of the late Dr. John Herbert Claiborne, formerly of Petersburg, Va., and later of New York City, by the members of the "Virginians," an organization composed of former residents of Virginia now living in New York. Dr. Claiborne, who was well known in this State and a member of the Medical Society of Virginia, died in New York several months ago. He was a graduate of the University of Virginia, president of the University of Virginia Alumni Association in New York, and a former governor of the "Virginians." Resolutions were passed commemorating his work as a prominent specialist of New York City, and for his devotion and interest in all those whom he served as a physician, for his efficient services during the Spanish-American and World Wars, and for the great work he had done in advancing the interests and development of the "Virginians."

Dr. Charles Sager,

After spending several months with relatives in Woodstock, Va., in December left for Charleston, W. Va., where he will practice medicine.

Dr. and Mrs. Fletcher J. Wright

And sons, of Petersburg, Va., visited relatives in Blackstone, Va., during the holidays.

The Richmond Dental Society,

At its annual meeting in December, elected Dr. R. C. Walden, president; Dr. John Bell Williams, vice-president, and Dr. L. S. Hoover, secretary-treasurer.

Dr. and Mrs. R. H. Woolling,

Pulaski, Va., spent the Christmas holidays at the doctor's old home in Fluvanna County, Va.

Provisional Birth and Mortality Figures for 1922.

The Department of Commerce announces that provisional figures compiled by the Bureau of Census, for the first six months of 1922, indicate lower birth rates and higher death rates than for the corresponding six months of 1921. The highest birth rate for the period mentioned above is shown for North Carolina and the lowest for Vermont; the highest mortality rate for the same period is shown for Maine and the lowest for Idaho.

Influenza Again in Virginia.

Many cases of influenza are being reported throughout Virginia, though we are advised by the State Health Department that it is not so fatal as the epidemics of several years ago. Influenza appears to be coming from the South but it is expected its prevalence in Virginia will be of short duration.

Dr. A. deT. Valk,

Winston-Salem, N. C., has been elected president of the Eighth District of North Carolina Medical Society.

Baptist Hospital for Hot Springs, Ark.

A bill has been introduced in the U. S. Senate and referred to the Committee on Public Lands and Surveys, authorizing the Secretary of the Interior to turn over to the Baptist National Hospital Association a site of land not containing more than six acres in the Hot Springs National Park, to be used as a hospital, a suitable building to be erected by the Association.

The Second International Conference on Standardization of Serums and Serological Tests

Was held under the auspices of the League of Nations, November 20-26, 1922, at the Pasteur Institute in Paris. Despite the many points of view, the practical results from the free discussion were most encouraging to those who attended. Naturally, progress toward international standardization of the serums and

tests is slow, because of differences in methods used in the various countries but, for this reason, the importance and practical value of this standardizing is all the more apparent.

Dr. A. G. Thurman,

Formerly of Goodview, Va., is now located at Appomattox, Va.

Dr. A. G. Vaden,

Recently of Temperanceville, Va., is now located at Townsend, Va.

Dr. Dean B. Cole

Is at his home in Richmond, Va., after several months at Trudeau, N. Y. He will return to Trudeau in the Spring, but expects to be in Richmond permanently in the Fall.

Dr. B. R. Caldwell,

Who has been stationed with the Army Supply Base, in Norfolk, Va., is now at Ft. Bayard, N. Mex.

Dr. A. M. Byrd,

Who has recently made his home at Warm Springs, Va., is back at work again after being in ill health for three and a half years, and is associated with Dr. W. R. Williams, at Richlands, Va.

University of Maryland Celebrates Founders' Day.

Medical alumni of the University of Maryland, Baltimore, on December 18, celebrated their one hundred and fiftieth anniversary with a banquet at the Rennert Hotel, Baltimore.

T. B. Bed to be Supported by Lions Club.

Beginning January 1, 1923, the Lions Club of Roanoke, Va., will support a free bed at Catawba Sanatorium, Va., for the care of tubercular patients. This will be available for a patient from Roanoke City or Roanoke County.

May not this act as "a hint to the wise" for some of the other civic organizations scattered through our Commonwealth?

Dr. J. N. Hurty,

Of Indianapolis, who recently resigned as State Health Commissioner of Indiana, has been elected to the Indiana State Legislature.

Hygeia,

A medical magazine for lay readers, will shortly make its appearance. This was authorized by the 1922 House of Delegates and will be published monthly by the Board of Trustees of the A. M. A. It will be devoted to the development of individual and community health, based on the experience of generations of medical scientists in sickness prevention. The world's best writers, both scientific and popular, are to contribute to this magazine. The American Medical Association, 535 N. Dearborn Street, Chicago, Ill., will furnish further information about this.

1922 Report of U. S. Public Health Service.

The report of the operations of the U. S. Public Health Service, for the fiscal year ending June 30, 1922, will hold the attention of any one interested in public health work and its progress. The activities reported and the work accomplished show that this Service is measuring up to the high mark set for it.

Rockfeller Foundation Will Help A N. C. Medical College.

The Rockefeller Foundation has made a proposal to furnish $4,000,000 towards the establishment of the proposed State medical college in North Carolina. The stipulation is made that the college must be in some city large enough to provide aid for the college, especially in the way of patients, though no particular city is mentioned.

The Annual Report of the Surgeon General, U. S. Navy,

For the year 1922, compares most favorably with reports of previous years. Figures showed that health conditions in the Navy were better than since 1917. The work done by the personnel was of a high order. The fact is brought out that the medical corps contains only 769 commissioned officers—a number insufficient to maintain the desired efficiency of the medical department—and some steps should be taken to secure properly qualified physicians for the Service.

Dr. Paul W. Howle,

Richmond, Va., has been appointed physician to the city jail, succeeding Dr. William S. Gordon, who resigned after a service of nearly a quarter of a century.

Dr. G. G. Rhudy

Has moved from Wytheville, Va., to Blue-

field, W. Va., and opened officers in the Coal and Coke Building, on Federal Street. He will continue to limit his work to diseases of the eye, ear, nose and throat.

Russian Doctors in Need.

Dr. Haigh, a member of the Health Committee of the League of Nations, and health expert attached to the Nansen Organization, states that medical and health institutions in many parts of Russia are in a serious condition. The hospitals lack everything for their good working and the medical staff, badly equipped, are even suffering from hunger, which makes the struggle more desperate. He states that there is urgent necessity for providing them with relief.

Dr. S. W. Budd,

Of this city, has been chosen pathologist at Retreat for the Sick, Richmond, to fill the vacancy caused by the death of Dr. E. G. Hopkins.

Dr. J. W. Williams,

Formerly of Richmond, but who has for several years past made his home near Louisa, Va., is now located at Kents Store, Va.

The Southern Gastro-Enterological Association,

Meeting conjointly with the Southern Medical Association in Chattanooga, elected Dr. Julius Friedenwald, Baltimore, president, and Dr. John B. Fitts, Atlanta, Ga., secretary.

The Southern Association of Anesthetists,

Also meeting conjointly with the Southern Medical Association, elected Dr. Ansel M. Caine, New Orleans, La., president, and Dr. W. Hamilton Long, Louisville, Ky., secretary.

The Southern States' Association of Railway Surgeons,

An auxiliary of the Southern Medical Association, at their recent meeting in Chattanooga, elected Dr. W. W. Harper, Selma, Ala., president; Dr. S. S. Gale, Roanoke, Va., vice-president, and Dr. J. W. Palmer, Ailey, Ga., secretary.

The Southern Hospital Association,

Another auxiliary of the Southern Medical Association, elected Dr. Stewart R. Roberts, of Atlanta, Ga., president, and Dr. J. B. Franklin, of Dallas, Texas, secretary.

Women Physicians of the Southern Medical Association,

At their annual meeting in Chattanooga, elected Dr. Elizabeth Kane, Memphis, Tenn., president, and Dr. Josephine D. Hunt, Lexington, Ky., secretary-treasurer.

Dr. Sidney Trattner

Returned to his home in Richmond, the middle of January, after a visit to relatives in New York City.

Dr. Everett S. Barr

Has been appointed to the position of Medical Director, Bureau of Hospitals, in charge of the Hospital for Mental Diseases, Byberry and 34th and Pine Streets, Philadelphia. He has filled the position provisionally since last November, when Dr. S. W. Hamilton resigned. Dr. Barr is a graduate of the Medical College of Virginia, Richmond, in 1916, after which he served an internship at Hygeia Hospital, this city. During the World War, he saw active service as a neuro-psychiatrist, both in this country and overseas.

The Philadelphia *Journal of Commerce*, in noting this appointment, is exceedingly complimentary of Dr. Barr. He has many friends in Virginia who will be interested in his success.

Obituary

Dr. Erasmus Guy Hopkins,

One of the best known pathologists in this section, died at his residence at Glen Allen, Va., December 19, after an illness of seven months with cancer. He was born in Fredericksburg, Va., in April, 1877, and, upon completion of his academic education, studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1899. He was a house surgeon at St. Luke's Hospital, this city, for one year. He had been an active member of the Medical Society of Virginia since 1900.

Dr. Hopkins was for a number of years professor of clinical pathology in the University College of Medicine and later in the Medical College of Virginia. By his unfailing courtesy and charm of manner, he had endeared to himself a host of friends. During the World War, he served with Base Hospital

45, and organized the pathological department of the unit. He served with such ability that he was later appointed consulting pathologist for a group of hospitals at Toul, comprising some 20,000 beds.

Dr. Hopkins is survived by his wife, who was formerly Miss Pauline Gary.

Dr. Edward A. Craighill,

An honorary member of the Medical Society of Virginia, died at his home in Lynchburg, Va., January 2, aged 82 years. He was a native of Charles Town, W. Va., but had lived in Lynchburg for about 65 years. He was a graduate in medicine from the University of Pennsylvania in 1861, shortly thereafter entering the Confederate army as a surgeon. Upon termination of his service in 1865 he had the rank of major.

Dr. Craighill had been a thirty-third degree Mason since 1877. He was for a number of years president of the Board of Aldermen of Lynchburg, a former member of the board of Central State Hospital, Petersburg, and an ex-president of the Virginia Pharmaceutical Society. He was engaged in retail drug business in Lynchburg until about ten years ago. His widow and two sisters survive him.

Dr. Armistead Green Taylor,

One of the most prominent and best loved citizens of Amelia Conty, Va., died at his home near Mattoax, January 2, at the age of 81 years. The interment was made in Hollywood Cemetery, Richmond. He was a student at the University of Virginia, when the War Between the States broke out. However, he at once joined the Confederate army and served with distinction throughout its course. Upon the termination of the war, he took up the study of medicine at the Medical College of Virginia, from which he graduated in 1867. He then returned to his native county and had practiced there continuously since. He is survived by two sons, one of them Dr. Lewis Harvie Taylor, of Washington, D. C.

Dr. Claude Dalby Kellam,

Of Norfolk, Va., died at his home in that city, December 15, after an illness of several weeks. He was forty-one years of age and studied medicine at the former University College of Medicine, Richmond, from which he graduated in 1903. He became a member of the Medical Society of Virginia in 1904. He was especially interested in neurological work and limited his practice largely to this branch of medicine. He is survived by his wife, formerly Miss Inez Childress, of Petersburg, Va.

Dr. Samuel Stewart Snarr,

Of Mt. Jackson, Va., died December 12, at the age of 42 years. He was a graduate from the Maryland Medical College, of Baltimore, in 1909, and had been a member of the Medical Society of Virginia since 1915.

Dr. Meade Randolph Edmunds,

Formerly a member of the Medical Society of Virginia, died in Washington, D. C., November 30. His death was due to accidental asphyxiation. He was 40 years of age and had graduated in medicine from the Department of Medicine of George Washington University, Washington, D. C., in 1906.

Dr. Forest Alphonso Carpenter,

Of Statesville, N. C., died from cerebral hemorrhage, at Battle Creek Sanitarium, Battle Creek, Mich., December 2. He was 43 years of age and had graduated from the North Carolina Medical College, Charlotte, in 1906. Dr. Carpenter specialized in eye, ear, nose and throat diseases, and was part owner of the Carpenter-Davis Hospital, in Statesville.

Dr. Frank Arnold Fox,

Greenville, Tenn., was found dead in his automobile, November 26, with a bullet wound through his heart. He was 26 years of age and had graduated in medicine from the University of Virginia in 1921, at which time he was appointed to an internship at Charity Hospital, New Orleans.

Dr. Luther Sexton,

Of New Orleans, La., who frequently contributed to this journal, died November 30, after a long illness. He was 62 years of age and a graduate in medicine from Tulane University of Louisiana in 1881. He was assistant professor of clinical minor surgery and for twenty-five years lecturer on surgery at this school. He was at one time a member of the Louisiana State Board of Health.

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 11.
WHOLE No. 848

RICHMOND, VA., FEBRUARY, 1923.

20 CENTS A COPY
$2.00 A YEAR

Original Communications

CONCERNING OCULAR EXAMINATIONS IN THEIR RELATION TO GENERAL MEDICAL AND SURGICAL INVESTIGATIONS. (Illustrations.)

By G. E. de Schweinitz M. D., Philadelphia, Pa.

Permit me to express my high appreciation of the honor and pleasure which is mine in that, on the kind invitation of your President, I am privileged to address the members of the Medical Society of Virginia.

Fully aware that among you are a number of physicians who devote their lives to that department of our professional work with which for many years I have been identified, I am equally aware that the majority of the men and women here assembled are chiefly concerned with the wider fields of general medicine and surgery. Hence, it is proper that this address shall concern itself with some subject in which we have mutual interest. The topic chosen has been submitted to your President, and has received his approval and, although the subject-matter is far from unfamiliar, it may be, that in repetition and in emphasis, points of common advantage may be elicited.

In the 13th century Roger Bacon said, after describing the properties of a convex lens, "therefore this instrument is useful to the aged and to those having weak eyes," and thus relieved ocular distress of which six centuries before Aetius had written but could not explain. To Kepler, in the 17th century, we are indebted for our earliest knowledge of myopia, and quite early in the 19th century James Ware discovered the real significance of hyperopia, or far sight, but it remained for Donders, fifty odd years later, to point out the meaning of the pain occasioned by a hyperopic eye. Early in the same century the Royal Astronomer, Airy, had demonstrated astigmatism and corrected it in his own eyes, and later Isaac Hays in our country, aided by the optician, McAllister, performed the same service for a sixteen year old girl with defective vision. But the real knowledge in this country of the evils of eye-strain we owe to Weir Mitchell and the labors of Isaac Dyer and William Thomson. Just fifty years ago Mitchell said: (1) "What I desire, therefore, to make clear to the profession at large is that there are many headaches which are due to the disorders of the refractive or accommodative apparatus of the eyes; (2) that in these instances the brain symptom is often a most prominent and sometimes the sole prominent symptom of the eye troubles, so that while there may be no pain or sense of fatigue in the eye, the strain with which it is used may be interpreted solely by occipital and frontal headaches: (3) that the long continuance of eye troubles may be the unsuspected source of insomnia, vertigo, nausea and general failure of health: (4) that in many cases the eye trouble becomes suddenly michievous owing to some failure of the general health, or to the increased sensitiveness of the brain from moral or mental cause." We have elaborated our methods, improved our instruments of precision and extended the list of interpretations of eye-strain, but otherwise we have been able to add but little to this complete and compact presentation of the facts of the case.

This brief historical reference may be pardoned, familiar as it doubtless is to all of you, because these were really great observations. We rejoice in the value of these discoveries, and should not forget the names of the men to whom we owe them.

Today, cognizant of the fact that fully seventy-five per cent. of functional headaches are due to refractive error and muscle imbal-

*Resume of an address presented by invitation at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

ance, examination of the eyes in this respect has become a routine procedure, and its necessity is realized almost as well by the laity as by the profession. Hence, it is not necessary, in general terms, to elaborate this matter as a professional obligation. But certain facts in this relation, although also well known, should be emphasized:

1. Eye-headache, although it may at times have preferred localization has no pathognomonic situation; it may be situated in any portion of the cranium.

2. Eye-headache and eye-pain are not necessarily coincident manifestations; frequently the eyes themselves are painless.

3. Eye-headache, and in fact, all manifestations of eye-strain, general as well as local, are caused by small, often trifling, refractive and muscular errors, more frequently, in fact, than by the higher anomalies of refraction; the commonly asked question, "has this patient enough refractive error to cause headache," is useless; if any error exists, other things being equal, it may be sufficient to establish an etiologic relationship.

4. Just as eye-headaches do not necessarily select definite areas of the cranium for their position, so also the head may be painless, and a different place may be attacked—the neck, the intrascapular region, the base of the spine, the praecordium and the gastric area being favorite localizations; this fact too often escapes notice and hence a correct interpretation escapes detection.

Of the long list of eye-strain interpretations classified as "nervous disturbances," general and local, ranging from vertigo and insomnia to convulsive seizures, I shall not speak. They are well known. But it is worth while to refer to this matter as it relates in general terms to what may be called gastric and intestinal disturbances, that is, constipation, gastric and intestinal indigestions, especially of the flatulent types, because although a distinguished internist many years ago discussed and emphasized this subject, it practically always escapes mention in books on internal medicine. Fully aware that when an ophthalmologist begins to talk about "eye-strain," he runs the risk of being accused of over-emphasizing the evidence in the case, and fully aware, also, that this whole matter has not always escaped exaggeration, and, in fact, has sometimes earned this criticism, none the less, this brief review is not out of place in a paper which concerns itself with co-operative work between medical men and ophthalmologists.

Let me now for a moment reverse the shield, so to speak, and say a few words about what has been called "the mimicry of eye-strain," and set before you a few illustrative examples. A notable one is this: A patient has as his chief symptom persistent itching, burning, smarting and formication of the eyelids, especially their ciliary borders, increased by eye use. Surely this is a common sign of eye-strain, and often promptly disappears after suitable optical correction, but just as surely in a fair number of cases is utterly unrelieved by glasses. This manifestation is due to what has been vaguely and unscientifically called the lithaemic state, or often the uric acid diathesis. It is somewhat analogous to the hot and itching and tingling feet at night in the subjects of gout, and is cured, not by glasses but by treatment, dietetic and otherwise, directed to the relief of the disordered nutrition.

Another interesting manifestation is a fugitive edema of one or both eyelids, or sometimes a persistent edema of the palpebral margin, with or without headache, uncured by optical therapeutics or local applications. Naturally, ocular reason being excluded, renal disease, paranasal sinus infection, or the administration of certain drugs, notably arsenic, may be accused. These being eliminated, there remains the arthritic type which yields to measures such as have been described.

Another type, and I leave this part of the subject: At various intervals the patient experiences a sharp prick of pain, as if a needle were thrust into the eye, and examination will usually reveal one or more very tender spots, generally in the upper scleral expanse, sometimes surrounded with a slight spot of injection. Easily attributed to refractive error, which, indeed, may often be the cause in a fair number of the cases, these tender spots and pin-thrust pains interpret a gouty or uratic diathesis and yield to suitable measures. So, too, there may be intermittently the sensation of a foreign body so exactly simulating that produced by a cinder or similar particle that it is with difficulty the patient is persuaded of its absence. Such patients often,

indeed, always, need the correction of refractive error, but not infrequently that is not sufficient. It may be a gouty manifestation, but more often depends upon neurasthenia, and is the analogue of the sore spots of which such patients complain on the sternum, in the inframammary region and elsewhere. The point which it is desired to make plain is not that glasses should be disregarded; quite the contrary, the most exact correction should be ordered, but if they are as accurately adjusted as is possible, that other etiologic factors be considered and attention to them in co-operation with general medicine be considered and carried out.

It has always been a matter of some astonishment to me that practitioners or internists do not more frequently use the ophthalmoscope as an instrument of precision to aid in their work. They are quick to turn to and use the best and newest types of stethoscope, sphygmomanometer, electro-cardiographs, percussion apparatus, and electric apparatus of all kinds. Why not an electric ophthalmoscope, so easy to acquire and so easy to learn? Perhaps I should not complain as they avail themselves of its information through the aid of the ophthalmologist, and I frankly hope they won't stop. But it may well be that so-called expert advice in this respect is not always immediately at hand, and at any rate, if their own examinations are unsatisfying, others can always later be obtained. The recognition of arteriosclerosis in the developed stage presents no especial difficulties—the condition of the pulse, the character of the heart sounds, the increased tidal wave on the sphygmogram, and the elevation of tension recorded by the sphygmomanometer are well-known diagnostic indices.

But a positive determination of the existence of arteriosclerosis in the earlier stages is not so easy, and it is more definitely established that the ophthalmoscope may reveal these "positive" evidences before the general disease has become manifested. Moreover, this fact should not be lost sight of, viz., that the four cardinal indices previously named are not alone found in arteriosclerosis, but, to quote Alfred Stengel, may be present in varied conditions of the system, organic and nervous in origin, and in which arteriosclerosis plays no part except as a consequence. So far as I know, the ophthalmoscopic signs are not produced by any condition other than arteriosclerosis,—it may be local, it may be general. Hence, it will not, I trust, be out of place to review and illustrate a few of the ocular signs.

The remainder of the paper consisted in a brief lecture illustrated with water colors depicting: (1) the vascular changes visible in opthalmoscopic examination of the eye-grounds of the subjects of arteriosclerosis especially of the carotid area, from the earliest indications to the late stages; (2) various types of renal retinitis and of the retinitis due to pregnancy, associated with albuminuria, and without notable vascular changes; (3) various types of diabetic retinitis, so commonly associated with vascular disturbances; (4) the eye-ground changes in association with increased intracranial pressure, especially choked disc, in its early, fully developed and subsiding stages; (5) so-called spurious optic neuritis and the methods of making a differential diagnosis, notably by studies of the size and shape of the "blind spot;" (6) the effect of cerebral decompression; (7) the presence of tubercles in the choroid, where they are the only lesions, and where they are associated with papillitis; also proliferating retinitis due to tuberculosis; (8) the eye-grounds of patients the subjects of methyl-alcohol poisoning, and of tumors in the pituitary body. Twenty-one water colors, with brief clinical histories, were utilized in this demonstration.

1705 *Walnut Street.*

Discussion.

Dr. C. C. Coleman, Richmond: Dr. de Schweinitz renders a real service to the profession of this State by presenting in such an impressive way the phases of his specialty which have a bearing upon the work of those in other fields of medicine.

I regret that Dr. de Schweinitz was not here last night to discuss ophthalmological diagnosis in reference to brain tumor. While his demonstration makes an appeal to every department of medicine, the part that particularly interests me is the study of the eye as a factor in neurological diagnosis. It is true that of all the things which have to do with diagnosis of brain tumor, the study of the eye perhaps takes precedence over any other single investigation. I think we are beginning to realize the dangers of partial optic atrophy from a high degree of choked disc. My own experience has been that most of the patients with brain tumors, who were allowed to continue with a high degree of choked disc from intracranial tension, are very apt to have some impairment of vision, even though the choked disc should subsequently be relieved by dealing successfully with brain tumor. It is of the greatest import-

ance to relieve the pressure upon the disc before fibrous tissue changes take place.

I am glad that Dr. de Schweinitz has called attention to the use of the ophthalmoscope by internists, neurologists and those who attempt to do neurological surgery. While the refinements of an ophthalmological diagnosis naturally belong to those whose interests lie in this particular field, it is essential that all who are interested in the discovery or treatment of lesions of the central nervous system should be able to recognize a choked disc or impairment of the visual fields.

Dr. J. Warren White, Norfolk: I am glad Dr. de Schweinitz brought out the importance of the routine use of the ophthalmoscope. In arriving at a diagnosis I feel that the ophthalmoscopic picture is important in the same way as the laboratory or X-ray. It is not necessary, however, for those who are not making a specialty of ophthalmology to be able to interpret the different pathological conditions, but to familiarize themselves with the differences between the normal and the pathological.

Dr. A. A. Burke, Norfolk: There are one or two points Dr. de Schweinitz brought out that I must take issue with him just a little bit. I do approve of the internist and others using the ophthalmoscope, but some of us have an idea we can make a diagnosis with the ophthalmoscope when we can't.

Dr. de Schweinitz showed a case of chronic astigmatism in which he was unable to say at first whether it was a case of choked disc or not. I recently had a case that was sent to me. I examined the eyes and they looked very much like choked disc, but I found it was a very high degree of astigmatism. Ophthalmogists would very easily be led astray unless they were able to refract the cases. Of course, as Dr. Hill said, 20/20 means nothing because you may have 20/20 central vision but your peripheral vision may be poorer. You can get more information by doing a visual field. I think visual field examination should be made in every case, and there are very few cases on which I do not do a visual field or have it done. You frequently do not have very much time if you are going to see more than four or five cases a day, but you can have someone in the office trained to do that. That has been our method; that is what we have tried to do. The visual field will frequently throw light on the case when the ophthalmoscope will give you no information at all.

In regard to optic neuritis, I had a case sent me with a vision of 22/100, and I could not improve it. He thought he had a sinus infection, and probably from pressure or through the circulation was affecting the optic nerve. This proved to be a case of maximal astigmatism, and the vision improved with glasses to 20/20. There was no indication of any disease there at all. So another point is that we should take into consideration whether these cases are improved or unimproved with glasses after making the ophthalmological examination.

THE DIAGNOSIS OF BRAIN TUMOR.*

By BEVERLEY R. TUCKER, M. D., Richmond, Va.
Professor of Nervous and Mental Diseases Medical College of Virginia.

The diagnosis and localization of tumor of the brain is fraught with many difficulties and is far from being, solely, a matter of anatomical knowledge, and precision in the interpretation of organic symptoms. These are only two essentials and one must use, in addition, general medical acumen, intuition, deduction, experience and even imagination in the attempt to arrive at a diagnosis.

The diagnosis of tumor of the brain naturally falls into three considerations. *First*, Is there a tumor present? *Second*, If so, what is its location? *Third*, If a brain tumor is present, localizable or not, shall we advise operation? Further than this, that is as to the character of the operation, et cetera, the deponent sayeth not.

Is a Brain Tumor Present?

One should not, in answer to this question, rely upon the "cardinal symptoms" found in text books, for these symptoms, headache, vomiting, vertigo, choked disc, cranial nerve palsies and mental changes—may or may not be present.

In one of our series, a tumor of the pituitary with acromegaly and mental depression, there was no vomiting, vertigo, choked disc or cranial nerve changes and the headache was general in character. In another case, a large left frontal tumor, there was no headache, vomiting or vertigo and no choked disc until late in the condition. Still another patient had no cranial nerve palsy, vomiting, vertigo or choked disc although autopsy revealed a large right frontal glioma. Many similar cases could be cited. Thus we are led to believe that brain tumor may exist without giving the symptoms of increased intracranial pressure or of space restricting lesions. On the other hand, Frazier has stated that "the mimicry of tumor by hydrocephalic conditions is not unusual." Looking at the problem from still another angle, brain tumor may, at times, give such marked signs of increased intracranial pressure that the diagnosis of hydrocephalus may be made and the tumor not suspected. One of our series was a boy with a large head who had vertigo, vomiting and much increased spinal fluid pressure. He had been considered a case of hydrocephalus until we made the diagnosis of cerebella tumor based chiefly upon the symptom of "over-reaching." This diagnosis was confirmed at autopsy.

The reason for some cases of brain tumor having the so-called cardinal symptoms, and

*Read as part of the Symposium on Brain Tumors at the fifty-third annual meeting of the Medical Society of Virginia at Norfolk, October 31—November 3, 1922.

others not, seems to rest upon several factors. The character of the growth may be either space restricting and act as a displacing foreign body intruding into the cranial space, or infiltrating, the lesion, like the decay of an apple, eating its way by replacing normal brain tissue with tumor tissue. Another factor may be that the tumor may grow slowly in certain directions without giving general or local symptoms till late.

The symptoms of some tumors, especially gliomas, as I have pointed out elsewhere, may be preceded by head injury. In one of our series a boy, previously perfectly well as far as his parents knew, was struck upon the back of the head by a well bucket. This injury was followed within a week by symptoms of a cerebella tumor. A tumor in this location, without hemorrhage into it, was found at autopsy four weeks later. In this case the injury seems to have caused a rapid development of symptoms in a latent growth. In other cases the focus of the injury seems to have been the starting point of the tumor growth.

Rapid development of the symptoms of a brain tumor is not always due to injury. A spontaneous hemorrhage may take place in or about the tumor mass, or a tumor may shift its position and bring on nerve symptoms or, for some obscure reason, the neoplasm itself may suddenly take on increased rapidity of growth.

Tumors of the brain are not so rare as was at one time supposed. Their pathological character is varied and will not be here discussed.

It is not a fact that blood pressure increase is a symptom of brain tumor. In fifteen of our series in which this question was studied no relationship could be traced. Lumbar puncture is of value in the diagnosis of brain tumor in connection with the question of syphilis. It is a dangerous procedure, as stressed by Cushing, if the growth is subtentorial. The globulin content of the fluid may or may not be increased and the pressure may not be increased in infiltrating growths and certain growths causing internal hydrocephalus. Should the patient have a positive Wassermann, either in the blood or fluid, or in both, it does not, of necessity, follow that the growth is a gumma. In one of our series an endothelioma was found in a patient who had a strongly positive Wassermann.

We should remember that focal symptoms, themselves, frequently guide us in the general diagnosis that a brain tumor is present. This was especially true in two cases of young men in whom gradual increasing paralysis of one side of the body occurred, in each case the arm becoming first involved and then the leg. In another case presenting a similar onset, the diagnosis was missed because the patient, a plumber, had positive evidence of lead poison. A cortical glioma was found at operation at another clinic.

One should always bear in mind the possibility of multiple lesions, especially those of carcinomatous metastasis and tuberculosis. Multiple tumors are said to be more common in the cerebellum than in the cerebrum. One of our series had cerebella symptoms with oculomotor paralysis of one eye. Two lesions were found, one on the under surface of the cerebellum and the second in the oculomotor nucleus. It should also be noted that the tumors of one hemisphere may invade the other hemisphere. This has occurred several times in our series. Other brain lesions, as thrombosis or hemorrhage, may be present in addition to tumor and cerebral edema may confuse the picture. One of our cases had a temporal lobe hemorrhage on one side and a temporal lobe tumor in the other hemisphere.

Skull lesions may give symptoms somewhat resembling brain tumors. These are usually osseous plaques and bony depressions or ingrowths. One of our cases showed at autopsy a piece of beer bottle from an old injury pressing into the brain substance and in another case there was a pyramidal shaped ingrowth of bone and, where it pressed into the brain, gliomatous tissue degeneration had taken place.

Certain conditions occur frequently enough in brain tumor cases to deserve attention. Exophthalmos, especially unilateral exophthalmos, may be encountered. Convulsions, Jacksonian in type or general, may occur, trigeminal pain, particular attention to which has been called by Cadwallader, and even glossopharyngeal pain, as pointed out by Weisenburg, may constitute brain tumor symptoms. Gradually increasing paralysis, changes in the visual and color fields, reflex and gait changes,

and many other symptoms of localizing value may also aid in the general diagnosis that a brain tumor is present. We should also remember that the headache of brain tumor is usually localized near the affected area, though not always by any means; that the vomiting as a rule is without regard to meals and may be, but not necessarily, projectile in type: that the deafness is of the bone conduction type; that, whereas there is nothing pathognomonic about the mental symptoms, there is often some clouding of consciousness, that the choked disc is an edema due to mechanical pressure and not the neuro-retinitis of inflammatory origin; that it may be absent, early, late, slight, marked, unilateral or bilateral, and that cranial nerve palsies are, as a rule, not complete; that in central facial palsy the upper branch frequently escapes; that isolated glossopharyngeal paralysis is unknown in man (Purves Stewart); and that the spinal accessory nerve is rarely affected.

It is not uncommon for hysteria to resemble brain tumor and *vice versa*, or both may be present at the same time. This makes it important that brain tumor cases should be studied by someone familiar with functional neurology.

Encephalitis, with or without lethargy, with its cranial nerve palsies, occasional choked disc, mental symptoms, vomiting at times, frequent vertigo, headache and reflex changes, may be mistaken for brain tumor. The diagnosis is usually encephalitis, if the onset is febrile or follows influenza and is rapid. The symptoms are, as a rule, diffuse rather than local, and lethargy or double ptosis, without other oculomotor signs, is often present. General tremors and muscular rigidity are also more frequent in encephalitis.

Brain abscess and brain tumor are subject to similar diagnostic considerations except that in abscess especial attention should be paid to history of running ears, infection elsewhere in the body, penetrating head injuries, leucocytosis, temperature rise, and slow pulse.

Uremia, especially when the ordinary evidence of nephritis is not marked, may be mistaken for tumor of the brain. In all cases of brain tumor, not only a urinalysis, but also blood urea nitrogen estimation and kidney function tests, should be made. In uremia the clouding of consciousness is usually more profound and motor cranial nerve palsies absent. It should be borne in mind that uremia and brain tumor may co-exist.

Cerebral vascular disturbance, that is slow hemorrhage or thrombus, may resemble brain tumor. In one of our series we made the diagnosis of a thrombosis of the angular gyrus in a case in which we later changed the diagnosis to abscess of the same region. The patient for weeks had no temperature or leucocytosis. This case was operated on by Dr. Coleman and the abscess found.

Brain Tumor Localization.

This subject is best approached by adopting, with slight modification, the usual anatomical subdivisions of the brain. Of course, tumors of any special locality may have, in addition to their focal symptoms, any or all of the general symptoms of brain tumor. Bearing in mind that tumors of one region, as they grow, may invade contiguous regions, or even the opposite hemisphere, and that contra-lateral pressure symptoms may occur, we still have rather characteristic symptoms which relate back to specific areas. By observing the diagramatic outlines herein presented and referring to the corresponding number in the text, the name of the area, and a list of the symptoms especially referable to a tumor of that area, may be noted.

The value of radiography in the diagnosis in certain cases is unquestionable. General or local brain pressure giving thinning or causing ridging or furrowing of the skull may be observed. Erosions through one or more plates of the skull may at times be seen. Sella turcica changes may be observed in both pituitary and pituitary neighborhood tumors. In one of our neighborhood tumors half of the sella was eroded away. One case showed a calcified area in the pineal region much greater than the normal size of the pineal gland itself and led to the diagnosis of tumor. It is a good rule to radiograph all cases suspected of being brain tumors and to do ventricle air injections, combined with radiography, in certain cases of doubtful localization.

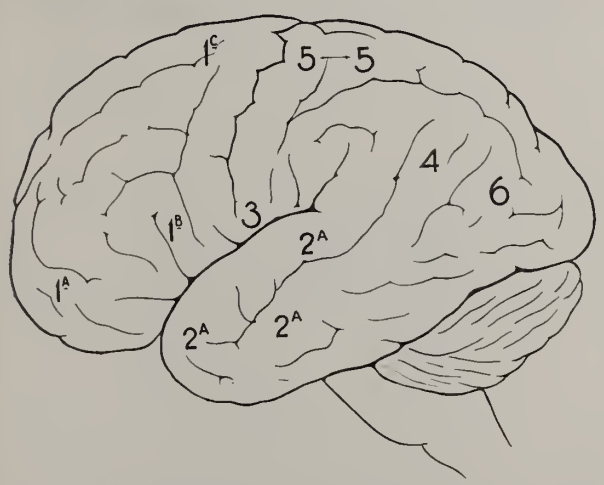
The Question of Operation.

Although many brain surgeons discourage decompressions, still we feel that it has a field of usefulness in cases not thought to be operable, or in some cases where an unsucess-

ful operation has been done. If it offers only temporary relief of such distressing manifestations as approaching blindness, violent headache, severe vomiting or mental stupor, it is justifiable. If a tumor, although localizable, is due to metastasis, a decompression for relief of symptoms is worth while. As a rule, however, we believe in operating for the tumor in a one or two stage operation, provided there is a fair chance of our localization being correct. Only experienced neuro-surgeons should attempt operations for brain tumors and the advent of the neuro-surgeon is a distinct asset both to the neurologist and the patient.

Brain tumors, not many years ago, were practically hopeless propositions and, whereas complete recoveries at present are far from as numerous as might be desired, still prolongation of life and amelioration of symptoms are common and some of our cases we count as complete and entire recoveries.

Cortical Surface Brain and Cerebellum

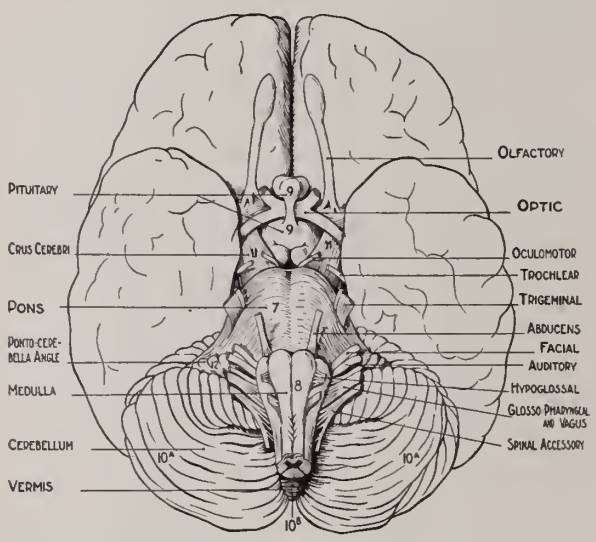


1. Tumors of the Frontal Lobe.
   A. Prefrontal area.
      Mental changes, ethical and moral lapses and changes in disposition. Jocularity.
      Sphincter neglect at times.
      Restlessness and rolling from side to side with extremities flexed.
      Orbit and frontal sinus may be invaded.
      Pressure backward may give cerebella symptoms.
   B. Postfrontal area.
      Convulsive attacks frequent with contralateral deviation of the head and eyes.
      In left sided, may have aphasia.
      Anosmia may occur on side of lesion.
   C. Motor area.
      Convulsions on side opposite lesion.
      Gradual paralysis on side opposite lesion but rarely completely hemiplegic and without marked circulatory disturbance.
      Frequent loss of sense of position on side opposite lesion.
      If extends across fissure of Rolando, sensory symptoms.
      If cortical, convulsions usually precede paralysis.
      If subcortical, paralysis precedes and convulsive movements apt to be more extensive.
2. Tumors of the Temporal Area.
   A. Few localizing symptoms.
      Motor aphasia if lesion on the left side.
      If pressure on the floor of Sylvian fissure, there may be word deafness and an aphasia in which the wrong word is said though the right one is known.
   B. Of Uncinate Gyrus. (See chart No. 3).
      Have "uncinate fits" which consist of hallucinations of smell and taste with brief "dreamy states."
      May also smack lips and may, or may not, develop convulsions.
3. Tumors of the Fronto-temporal Type.
   Word hearing, speech and word writing difficulty.
   Unilateral deafness and tinnitus in acoustic tumors.
   Trigeminal pain if Gasserian ganglion affected.
4. Tumors of the Angular Gyrus.
   Word blindness, inability to appreciate the written word.
   Concentric contraction of visual field in eye opposite side of lesion.
   Hemi-sensory disturbance and hemianopsia if tumor deep seated.
5. Tumors of the Parietal Lobe.
   Lessened sensation on opposite side of the body.
   Asterognosis (superior parietal convolution, but may also occur in lesions elsewhere).
6. Tumors of the Occipital Lobe.
   Hemianopsia, partial or complete.
   Visual hallucinations at times with flashes of light.
   If large and on mesial aspect may have complete blindness.
   If on under surface may have cerebella symptoms from pressure downward.

Automobile Accidents.

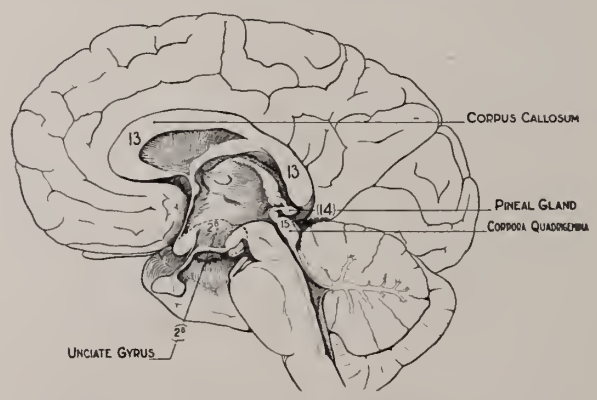
Rehabilitation News Notes gives startling statistics on automobile accidents in the United States. During 1921 an average of over 35 people were killed a day, totaling 13,000 killed by automobiles in 1921 alone. There seems a scarcity of data as to the number injured.

Under Surface Brain and Cerebellum



7. Tumors of the Pons.
   - Hemiplegia (usually) on side opposite lesion, also positive Babinski on this side.
   - Sensory loss (sometimes) on side opposite lesion.
   - Trigeminal, abducens, or facial nerve paralysis on side of lesion.
   - Nerve deafness on side of lesion may occur.
   - Nystagmus (frequent).
   - Inability (at times) to turn both eyes at same time toward side of lesion.
   - Hyperexia (may occur).
8. Tumors of the Medulla.
   - Cardiac symptoms.
   - Respiratory symptoms.
   - Bilateral involvement of limbs may occur (motor fibres caught at their decussation).
   - Bulbar symptoms from involvement of glossopharyngeal and hypoglossal. (Difficulty in articulation, deglutition, inability to protrude tongue and dribbling of mouth).
   - The abducens, facial, auditory and vagus frequently affected.
9. Tumors of the Pituitary Body.
   - Bitemporal headache frequent.
   - Acromegalic symptoms at times.
   - Frohlich's syndrome at times (increase in body fat and sugar tolerance with genital arrest.)
   - Upper temporal slant to visual fields or bitemporal hemianopsia.
   - Primary optic atrophy at times.
   - Polyuria not infrequent.
   - Convulsions frequent.
   - Somnolence, if third ventricle involved.
   - Oculomotor paresis, if tumor extends backward.
   - Sex characteristic changes may occur.
   - Pituitary may be affected from neighborhood growths.
10. Tumors of the Cerebellum.
    - A. Lobes.
      - Hypermetria (over-reaching) on side of lesion.
      - Lurching station or gait, with eyes opened or closed, usually to side of lesion.
      - Frequent choked disc and nystagmus.
      - Adiadokokinesia on side of lesion (inability to rotate hands symmetrically with the same rhythm and facility).
      - In lying down patient may roll to side of lesion.
    - B. Vermis.
      - Tendency to fall forward if lesion affects the anterior part, and backward if posterior part affected.
11. Tumors of the Crus Cerebri.
    - Hemiplegia on side opposite lesion.
    - Weakness lower part of face on side opposite lesion.
    - Oculomotor paralysis on side of lesion.
    - Non-intention tremor, sometimes, on side opposite lesion.
12. Tumors of the Ponto-Cerebellar Angle.
    - Combination of pontine and cerebellar symptoms.
    - Frequently begin with nerve deafness and tinnitus.
    - Vertigo and nystagmus common.
    - Trigeminal, abducens and facial nerve frequently affected. Others may be from extension.
    - Ataxia and weakness occur, usually greater on one side of the body.
    - Headache usually occipito-frontal.
    - Barany test usually positive.

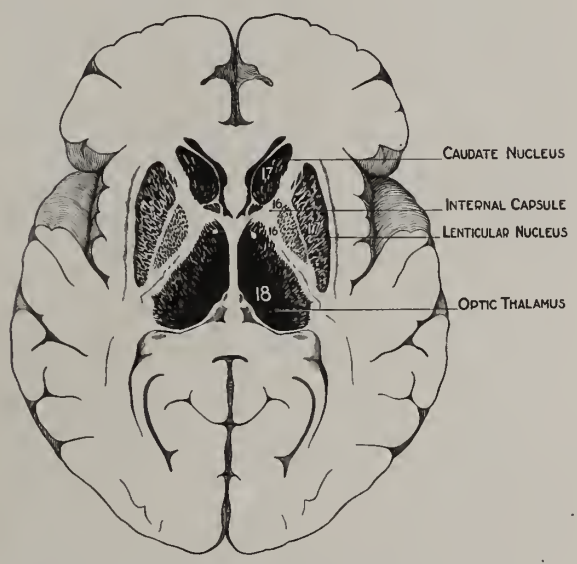
Mesial Surface of Brain



13. Tumors of the Corpus Collosum.
    - No definite set of symptoms.
    - Sometimes motor apraxia (inability to perform certain movements although no paralysis) on left when lesion on left.
14. Tumors of the Pineal Gland.
    - More common in childhood.
    - Associated with precocious body and sexual growth in children.
    - Mental brightness not uncommon.
    - Drowsiness may be a feature late in cases or in adult cases.
    - If corpora quadrigemina also involved, bilateral oculomotor paresis with sluggish pupils may occur.

15. Tumors of the Corpora Quadrigemina.
   Bilateral ptosis present usually with oculomotor weakness.
   Weakness of upward and downward eye movement and poor convergence.
   Pupil reaction often sluggish.
   Hemianopsia if external geniculate involved.
   Hearing at times affected.

Horizontal Section of Brain



16. Tumors of the Internal Capsule.
   Difficult to distinguish from tumors of the cortex and from vascular lesions of internal capsule.
   Rare.
   Gradual hemiplegia with unconsciousness and usually without convulsions.
   Sensation and vision affected if growth extends backward.
   Transient deviation of eyes at times.
17. Tumors of the Caudate and Lenticular Nuclei.
   Masked expression.
   Muscular rigidity.
   Non-intentional tremors at times.
18. Tumors of the Optic Thalamus.
   Emotional Disturbance.
   Decreased emotional movements of the face on the side opposite the lesion.
   Athetosis sometimes.
   Subjective sensory disturbance, at times, on the side opposite the lesion.

Tumors of the Anterior Fossa.
   Mental symptoms similar to prefrontal tumors.
   Unilateral loss of smell may occur.

Tumors of the Middle Fossa.
   Trigeminal (sensory and trophic) and masseter (motor) nerves often affected.
   Facial palsy on side of lesion frequent.
   Nerve deafness on side of lesion frequent.

Tumors of the Posterior Fossa.
   Symptoms resemble those of pons and medulla.
   Cranial nerve symptoms precede those of motor involvement (Gowers).
   Tendency, if cerebellar peduncle pressed, to deviate to side of lesion in walking.
   Convulsions not uncommon.

Tumors of the Ventricles.
   May arise from ependyma or ventricular neighborhood.
   May, by obtrusion, occlude, or partially occlude, ventricle or may block foramen and dilate the ventricle.
   Dandy's method of injecting air into the ventricles and radiographing them is an important aid in the localization of these tumors.

Tumors of the Meninges.
   Symptoms correspond to the area covered.
   May grow inward toward brain, or outward and corrode skull and be felt from exterior, or may grow both internally and externally.

Tucker Sanatorium.

THE IMPORTANCE OF OPHTHALMOLOGY AND OTOLOGY IN THE LOCATION OF INTRACRANIAL GROWTHS.*

By JOHN DUNN, M. D., Richmond, Va.

As medical knowledge advances, opthalmology and otology concern themselves constantly more and more with the localization of brain tumours. From the standpoint of today we blame yesterday for its remissness in applying the very simple rules whose recognition makes Today Yesterday's master.

Years ago, Otto Körner, writing of the local symptoms of brain abscess, divided these symptoms into three classes: 1. those which result from injury to the brain substance at the seat of the abscess; 2. those which result from inflammatory pressure about the abscess, and lastly, those which tell of injury to the cranial nerves inside the cranial cavity. He then takes the portions of the brain, in which occur abscesses secondary to temporal bone disease, states their functions and explains how the various symptoms arise. Had the principles involved in the above extract from Körner's work been systematically and thoroughly applied in the symptomatology of brain tumours, Today would have other cause to arraign Yesterday. The ability to transfer Körner's suggestions to the field of brain tumours and to successfully apply them in the interpretation of the latter's symptomatology pre-supposes a special knowledge of brain anatomy. I have

*Read by title as part of the Symposium on Brain Tumours, at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, 1922.

reference to the ability to visualize the brain tracts, not only as individual entities, but also in their anatomical relationship along their whole course to every other tract and to each centre. It furthermore pre-supposes a knowledge of what would be the result, expressed in symptoms, of the interference with each tract at any given point in its course.

Of the three great tracts in the brain, the internal capsule, the visual, and the vestibular, the first is the best known, because interference with its functions produces such evident and gross symptoms that they may not be overlooked by even the most casual observer. Given a case in which the general brain symptoms point to brain tumour, if accompanying these symptoms there is paralysis or paresis of one or more of the extremities, no one should be satisfied simply to posit the diagnosis brain tumour with involvement of the internal capsule, or its continuance. The portion of the internal capsule involved is the important point to be determined and further, whether the paralysis is the result of pressure on the capsular fibres or of their destruction. Many years ago, my brother, Dr. W. W. Dunn, brought me a young mulatto woman to determine the seat of a brain tumour whose symptoms were choked disc with blindness, paralysis of the fourth and some of the muscles supplied by the third nerve on the left side, and incomplete paralysis of the muscles of the right arm and leg. In the presence of the well-known syndrome of Weber, I jumped at the crude conclusion that the tumour was in the brain substance near the junction of the left crus with the pons. I told Dr. Dunn I thought the tumour was too deep for removal and suggested that he do a right-sided decompression with a view to lessening the intra-cranial tension, for its effect upon the choked disc. This was done. So far as relief of the tumour symptoms was concerned, no good was accomplished. A big hernia was the local result. Dr. Dunn then opened largely the left temporal region low down. A surface tumour, a gumma, as large as a lime was found. Its removal was followed by complete disappearance of the paralyses and restoration of vision, with relief from the general brain symptoms. The mulatto returned to work. All of the paralytic symptoms had been pressure symptoms, belonging to the second and third of Körner's divisions. To me, the case was the most instructive that ever came under my observation. It taught me from practical experience the well-known facts that blindness in the presence of choked disc is not necessarily always permanent; neither are the paralyses of the extremities, if the tumour be removed. It further taught me that not all brain tumours are hopeless, even though their accompanying symptoms would seem to indicate it.

This case has been selected because it shows the hopeful side of the apparently hopeless brain tumour problem and because it admits of the introduction of the place ophthalmology should play in the diagnosis of brain tumours. At the time I first saw this patient, she had lost her sight and all I could say as a result of my examination was that she had double choked disc in its pre-atrophic stages and that certain of the external ocular muscles of one eye were paralyzed. That the choked disc was double told of a general increase of intra-cranial pressure; that certain external muscles of one eye only were paralyzed, told on which side the tumour was situated, and rather clearly indicated that these paralyses were due not to pressure on the nuclei of the nerves involved, but were caused by stretching of the nerves themselves at their dural exits. The degree of blindness at the time the patient was first seen prevented the obtaining of one other piece of information which would most likely have been furnished had the patient been seen earlier, viz., the presence or absence of hemianopsic defects. The examination of the ocular fundus, in cases of suspected brain tumour, does not cease with the determination of the presence or absence of choked disc. The field of vision should be examined even when the discs are choked, for to the concentric contraction caused by the swelling of the nerve at its entrance into the ball may be added well marked hemianopsic defects, a valuable piece of information in many cases.

The science of ophthalmology concerns itself with every question which concerns vision and the brain surgeon has a right to demand from the ophthalmologist the explanation of every abnormal visual symptom he may discover in the examination of his patients.

Into the province of the ophthalmologist come, besides evidences of muscular imbalance, the many questions which centre about choked

discs, about retro-ocular tumours of the optic nerve, about the various field pictures which the frequent tumours of the hypophyseal gland produce, about the field changes from pressure upon the optic tracts, and lastly the determination of field contraction in tumours of the temporal lobe, and thence all along the course of the fibres of the optic radiations to the occipital centres.

Not only should the opthalmologist be able to chart the field defects in every case, but he should be able to interpret them and give to them their proper value in their relation to the other symptoms which make up for each case its clinical syndrome. Further than all these, he should be able to give a proper place to sector defects in the field which, although they are present in some cases of suspected brain tumour, are caused by lesions in the fundi.

Within the past few years, owing largely to the work of Barany and his school, the importance of an exact knowledge of the vestibular nerve tracts has been shown to the students of otology. When we have a clear view of the connections of these tracts in the cerebellum, in the medulla, and throughout the whole length of the pons; when we bear in mind that well-nigh every striated muscle fibre in the human body responds to functional disturbance of these nerves; when, further, we keep before us the fact that the free portions of these nerves are not uncommonly the origin of tumours which may be and have been diagnosed and safely removed surgically before they produce the great damage to the medulla and pons which they are sure to do if left in situ; may be and have been diagnosed while the eye backgrounds are normal, the importance to the otologist of the anatomy and functions of the vestibular nerves is at once apparent. It is to the otologist that the brain surgeons must look for aid in the interpretations of disturbances of the vestibular nerve ends and tracts, for, as the optic nerve begins, if, we may so express it, in the back of the eye-ball, so the vestibular nerves begin in the inner ear and intelligent differentiation of the disturbances of the functions of the inner ear is the result only of much study and practical experience for which the brain surgeon rarely has the time. Interpretation of disturbances of the vestibular nerve terminals and of the intracranial free portions of the nerve is, in the majority of cases, easy and, within reasonable limits, exact. Interpretation of the part played by the vestibular nerve in the clinical pictures presented by tumours of the cerebellum, of the cerebellar peduncles, of the medulla and the pons, and of the temporal lobes varies in difficulty with the size, character, position, etc. of the growth and with the general condition of the patient at the time the examination is made.

When we drop our head ever so little to either side, or, in fact, in any direction up or down, impulses are sent centralwards from the vestibular nerve terminals. These on reaching the highest centres give information as to the position of the semi-circular canals and thus of the head. Were the tracts which carried these impulses uninterrupted throughout their course, interpretation of pressure upon them or of their destruction at any given point would be comparatively as exact as similar disturbances to the nerve fibres in the internal capsules. Unfortunately, however, for easy diagnosis, when we drop our head in any direction, another set of impulses are sent chasing centralwards, I mean those which are brought into play by the changes in the tension of the skin, muscles and tendons which produce the given change in the position of the head. Under normal conditions, unless these latter impulses are first originated, there are no impulses from the vestibular nerve terminals. It is not unlikely that these two sets of impulses reach the same mid-brain ganglia at the same instant and are transmitted to the cerebellum and to the highest interpretative centres of the brain as a combined impulse, the combination being affected and checked the one against the other in common mid-brain ganglia. This applies also for the eye muscle responses, which are identical in kind whether they are brought into play by stimulation of the vestibular nerve terminals or by dropping the head toward any point of the cervical ring. Tumours of the mid-brain region may interfere with these various tracts after their combination, or singly, or both together, before they reach the mid-brain ganglia or with the ganglia themselves and, to the confusion thus produced, may add disturbances of the greater motor tracts. For all this, when one has the ability to clearly visualize the problem of the vestibular nerve, intelligent

testing of its functions is capable of giving information which may be most helpful in diagnosis. The teachings of the Barany school have only recently, as time goes, been brought up for the consideration of the otologist, yet already their importance as an aid in the exact location of brain tumours has become indispensable. As repeated chartings of the fields of vision have to be done in cases of brain tumours suspected of being along the visual tracts, so, too, repeated testings are often called for where we suspect the pressure of a growth along the vestibular tracts. As one becomes more and more skillful in carrying out these examinations of the fields of vision and of the vestibular responses, nothing is more apparent than the false interpretations which one made while working in the shop of inexperience. If we bear in mind the length of the visual and the vestibular tracts, and the importance of the structures along which they lie, and bear in mind that every disturbance of these tracts in their every portion belongs to the province of either the ophthalmologist or the otologist, the value of these two branches of the medical science to the brain surgeon is apparent.

411 *East Franklin Street.*

VISUAL DISTURBANCES IN BRAIN TUMORS.*

By EMORY HILL, M. D., Richmond, Va.

A fundamental consideration in the understanding of disorders of the visual apparatus is the fact that the eyes are an integral part of the central nervous system. Equally important in the understanding of disease of the central nervous system is a study of that extensive portion of the brain which is concerned with vision. Six of the twelve pairs of cranial nerves supply the eyes and lids. The so-called optic nerves, which are in reality sensory cerebral tracts, pass through narrow bony rings at the apex of the orbits, lie on the body of the sphenoid bone in intimate relation to the hypophysis and infundibulum, the cavernous sinuses and the under surface of the brain, penetrate the brain substance to reach the primary visual centres, and then pass, after a forward loop through the temporal lobes, back in the optic radiations to the posterior tip of the occipital lobes, making connections with tracts from other portions of the cerebral hemispheres. With such widespread associations it is obviously impossible to separate ophthalmology from neurology and out of the question to investigate a case of brain tumor without an exhaustive study of the visual mechanism.

Three types of change may take place in brain tumor cases: namely, disturbance of ocular motility and of sensation through damage to the cranial nerves concerned, changes in the eye grounds from increased intracranial pressure, and changes in the fields of vision from pressure upon the intracranial visual pathways anywhere between the orbits and the most posterior limits of the brain.

Ocular Muscle Palsies were noted in 34% of cases of Uhthoff. The third and sixth cranial nerves are involved, the latter often as a distant symptom from general increase of intracranial tension. Tumors at the base are the most likely to produce such paralysis. Diplopia and ptosis are the result. Pupillary changes are not of great diagnostic value. The fifth nerve may be involved, giving corneal anesthesia and neuroparalytic keratitis. In cerebellar tumor the sixth nerve is more often involved and nystagmus is more frequent. Paralysis of associated movements and conjugate deviations are also more frequent in cerebellar tumors.

Changes in the Eye Grounds. Knapp says that choked disc "is the objective sign of an organic brain disease." Statistics indicate that about eighty per cent of brain tumors cause choked disc, and the percentage is even higher in tumors of the cerebellum. This appearance in the eye ground is primarily and often solely the result of mechanical pressure in the cranial cavity with engorgement of the cerebro-spinal fluid in the spaces about the optic nerves, strangulation of the central retinal vein and blocking of the return flow of lymph through the nerve, resulting in an edema of the optic disc and high protrusion forward of the disc with but little extension of the process into the adjacent retina. Inflammation, in the strict sense of the term, is not a factor in this picture. Whatever suggestion of an inflammatory process we see is the evidence of a secondary proliferation of glial tissue upon the disc. Without attempting

*Read as part of symposium on Brain Tumors at fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, 1922.

to enter into a controversy with the rhinologists, we may say that our present knowledge does not warrant the opinion that a choked disc can result from sinus infection without the intervention of increased intracranial pressure. Practically, it is of the greatest importance to distinguish between the choked disc or papilledema of mechanical pressure and the papillitis or neuro-retinitis of inflammation. It is not creditable to us that decompressions are done to relieve the latter condition, and mutilating surgery practiced upon every conceivable focus of infection when the patient is the victim of increased intracranial pressure. The blame for this rests with the ophthalmologist. He must differentiate two conditions which are totally different in origin and call for totally different treatment, and he must define these conditions accurately. We cannot expect intelligent interpretation of our reports upon eye grounds as long as the literature abounds with the indifferent use of the terms "papilledema" and "papillitis," "choked disc" and "optic neuritis," as if they were synonymous. It is true that the late stages of choked disc may be hard to distinguish from a neuro-retinitis, and that cerebellar tumors may give an appearance suggesting an inflammatory process, but these are rarer occurrences and do not warrant confusion of two readily distinguishable lesions in the great majority of cases.

The visual disturbance produced by choked disc may be absolutely nil. The highest degrees of edema are consistent with normal central vision and normal fields. A slight enlargement of the blind spots occurs later and contraction of the peripheral fields. Until the engorged retinal veins break, no diminution of central vision may occur. Therefore, the presence of normal vision does not for one moment exclude serious disease of the visual apparatus. Recurring transient obscuration with intervals of normal vision is of diagnostic value in cases of choked disc. When damage to vision has become extreme, we are dealing with later stages of brain tumor which ought not to have been reached without detection. It cannot be too strongly emphasized that 20/20 vision means nothing in the ophthalmic examination of a neurologic patient.

Choked disc occurs most often with tumors of the posterior fossa and tumors which are growing rapidly. It is much less frequent with tumors of the motor area of the cerebral cortex, on the convexity of the hemispheres and in the corpus callosum. Tumors in the region of the optic chiasm do not usually produce choked disc because the sheath of the nerves is compressed and increased intracranial pressure is not transmitted forward. A pressure atrophy is the common effect of such tumors and the association of bitemporal hemianopsia, or tendency thereto, establishes the diagnosis. Tumors at the base of the skull are more apt to produce cranial nerve palsies without ophthalmoscopic changes. Tumors originating in the brain substance cause choked disc more frequently than those arising in the meninges and compressing the brain without infiltrating it. Unilateral choked disc is said to suggest that the tumor is on the corresponding side; greater choking of one disc than the other has been thought to suggest that the tumor lies on the same side as the predominating edema of the disc, but these are very uncertain localizing signs.

Changes in the Visual Fields. The course of the visual fibres offers the possibility of localization of brain tumors, sometimes with very great accuracy. Each optic nerve represents the retina of the corresponding eye. The semi-decussation at the chiasm is quite definite, the medially placed crossed fibres representing the nasal halves of the two retinas, the laterally placed uncrossed fibres representing the temporal halves of the two retinas. Each tract, behind the chiasm, represents the temporal half of the corresponding retina and the nasal half of the opposite retina. This arrangement persists to the occipital visual centres. Thus, destruction of a nerve anterior to the chiasm destroys vision in the corresponding eye; destruction of the median fibres at the chiasm, which is the effect of a lesion in the midline, generally a growth of the pituitary body, destroys vision of the nasal half of each retina and produces a bitemporal hemianopsia. A binasal hemianopsia, due to destruction of the laterally placed uncrossed fibres, depends upon two symmetrical lesions and is naturally of very rare occurrence. Destruction of an optic tract causes impairment of the corresponding lateral halves of the two retinas and a homonymous hemianopsia; thus destruction of the right optic tract causes a left homony-

mous hemianopsia. With the homonymous hemianopsia of an occipital lobe tumor, visual hallucinations, alexia, optic aphasia, and mind blindness may be present. Word-blindness accompanies tumors which involve the angular gyrus. Cushing has recently called attentions to very striking hallucinations of vision in temporal lobe tumors, being clear cut pictures as distinguished from the vague impressions of light and colors which characterize hallucinations produced by lesions in the occipital lobes. Tumors involving the internal capsule may produce both hemianopsia and hemiplegia. Temporal hemianopsia and optic atrophy of one side with blindness of the other eye occur when a tumor in the anterior fossa involves one optic nerve and the chiasm.

Certain combinations of visual symptoms with evidence of disturbance of other functions help in the localizing of a brain tumor.

Tumors of the frontal region may lead to compression of the optic nerves and chiasm, along with impairment of mentality. Primary optic atrophy and temporal hemianopsia occur. If the tumor encroaches upon the posterior portion of the frontal lobe the motor centres are involved, with Jacksonian convulsions.

Tumors of the temporal lobe produce homonymous hemianopsia with clear cut visual hallucinations and occasionally uncinate attacks. Choked disc occurs from internal hydrocephalus.

Tumors of the hypophysis produce generally a primary atrophy without choked disc, and bitemporal contraction of the visual fields chiefly in the upper quadrants. Homonymous hemianopsia may result from pressure behind instead of just at the chiasm. The accompanying primary optic atrophy serves to differentiate these cases from tumor of the temporal lobe which produces choked disc along with homonymous hemianopsia.

Tumors of the supramarginal and angular convolutions are recognized largely by disturbance of the visual pathway. Homonymous hemianopsia occurs, with the addition of word-blindness in left-sided cases. Through involvement of the posterior end of the internal capsule, hemianesthesia and hemianalgesia occur. Hemiplegia is uncommon.

Tumors of the corpora quadrigemina and pineal body usually cause choked disc through the intervention of a hydrocephalus. A characteristic symptom is the failure of upward and downward rotation of the eyes. The third nerve is involved, with bilateral ptosis. Nystagmus is frequent. Third nerve palsy with deafness is a valuable combination when the inferior colliculus, which is an auditory centre, is involved. Precocious sexual development occurs with pineal body tumors in childhood.

Tumors of the cerebral peduncles, of which solitary tubercle is the chief example, involve the third nerve together with motor and sensory disturbance of the opposite half of the body. Alternating oculo-motor and body paralysis is a characteristic symptom. Unilateral dilatation of the pupil with ophthalmoplegia interna may occur. Eye grounds and fields are usually not affected.

Cerebello-pontine angle tumors produce bilateral choked disc late and paralysis of the sixth and seventh nerves; nystagmus is frequent. Deafness may occur early; in fact, the acoustic nerve is often directly involved. The sixth nerve is involved in eighty per cent. of cases, bilateral involvement being frequent. The facial may be involved and the fifth, giving rise to neuroparalytic keratitis. The third nerve of the opposite side may be involved along with the sixth nerve, giving a paralysis of lateral movement while convergence function of the third nerve is preserved. Such paralysis of lateral movement of the eyes with hemiplegia of the opposite side is characteristic of a lesion of the pons. Complete facial palsy and paralysis of lateral movement of the eyes, without crossed hemiplegia, may occur; also a facial paralysis with crossed hemiplegia in tumors of the lower part of the pons. Pupillary changes are not characteristic and nystagmus is unusual.

Tumors of the occipital lobe have as their most characteristic symptom a homonymous hemianopsia, or tendency thereto, with visual hallucinations of flashes of light in the blind half of the field. Cerebellar symptoms may occur from downward pressure of these tumors. Monoplegia and hemiplegia occur, the greater extent of paralysis being in tumors which reach deep and involve the internal capsule.

Tumors of the cerebellum produce choked disc more frequently than cerebral tumors, and more early. Ataxia, vertigo, a reeling gait, uninfluenced by closing the eyes, and nystag-

mus are the chief symptoms. General increase of intracranial pressure, rather than focal involvement of visual areas, damages vision in this tumor, and hemianopsia is absent, while paralysis of associated movements and conjugate deviations, together with sixth nerve palsy as a distant symptom, may occur.

Professional Building.

X-RAY EXAMINATIONS IN CASES OF BRAIN TUMOR.*

By DANIEL D. TALLEY, Jr., B. A., M. D., Richmond, Va.

The positive diagnosis and localization of brain tumor usually requires the services of the neurologist, the ophthalmologist and the brain surgeon. The roentgenologist may render valuable assistance in the investigation of suspected cases and exceptionally the X-ray findings may be so positive and striking as to establish the diagnosis; in a considerable percentage of cases, however, the ordinary X-ray examination will give no evidence of the presence of the growth. In the past few years the use of air injection into the ventricles of the brain in selected cases, followed by X-ray examination, has been of much value in the study of these growths.

The value of the X-ray as a factor in brain tumor diagnosis depends upon one or more of the following findings registered on the radiographs:

1. Actual visualization of the shadow of the growth itself or of a portion of same.
2. Alteration in the appearance of the cranial walls or floor due to pressure.
3. Abnormality in the structure of a portion of the skull by reason of the fact that the tumor involves the bone or is attached thereto.
4. Evidence in the cranial wall of a growth which has involved the brain by metastasis.
5. Alteration in the appearance of one or more of the cavities of the brain, after the injection of air for the purpose of visualizing these cavities.

The direct visualization of a brain tumor on the plate is technically impossible save in a very small percentage of cases. Most tumors are composed of tissue which does not vary appreciably in density from the normal brain tissue, and therefore casts no contrasting shadow. It must likewise be borne in mind that the increased density of the cranial bones is registered on the plates, which tends to obscure the visualization of slight differences in intracranial soft tissue density. Very occasionally a tumor may be partly calcified and may thus give very satisfactory evidence of its presence. A very few cases have been reported by reliable observers where a confirmed diagnosis of brain tumor has been made by visualizing the shadow of a soft tissue growth without other roentgen evidence, but in most cases such a diagnosis is impossible; certainly it is dangerous in the extreme to act on this finding alone.

Certain growths composed partly or entirely of bone tissue may arise from the wall itself and, extending inward, cause pressure symptoms. In such instances, the growth itself may be visualized, also any changes may be seen which have taken place in the structure of the adjacent portion of the affected cranial bone.

Pressure changes in the cranial bones may exhibit definite roentgenographic manifestations which are of very distinct value in determining, confirming or suggesting the presence of tumor. Such change may be caused by direct pressure from a growth itself upon the cranial wall or floor, general increased pressure may take place with resulting effects on the bony structures as a whole, or there may be a concurrent internal hydrocephalus, likewise causing changes in the appearance of the bones.

A growth which causes constant direct pressure on any one portion of the bone ultimately will cause either local atrophy or erosion. A notable example of this type is the tumor of the pituitary body or one which is in the neighborhood of the hypophysis. If the pressure be sufficient, changes will take place in the dorsum and floor of the sella and in the clinoids which may be more or less characteristic, though here the destruction from a neighborhood tumor may be difficult to distinguish from that due to general pressure. Some interesting work has been done by Carr in Cushing's clinic on the localization of tumors of the porus acousticus by observation of the pressure change in the internal auditory meatus. This work is based on reports from foreign observers.

The roentgen changes caused by general pressure include changes in the appearance of

*Read by title as part of the Symposium on Brain Tumors, at the fifty-third annual meeting of the Medical Society of Virginia, in Norfolk, October 31—November 3, 1922.

the sutures, dilatation of the venous channels and general alterations in the thickness of the walls of the skull which may be quite characteristic in appearance. As above stated, the appearance of the sella turcica may be very essentially changed by general increase in pressure.

Brain tumors which present fairly typical clinical evidence of their presence will show some of the above changes in perhaps fifty per cent. of the cases and the correct interpretation of the changes may be of considerable value in confirming the diagnosis or aiding in localization.

Even though these general changes when present be pathognomonic however, it must be admitted that they often represent an advanced stage of the disease. While some of these lesions are amenable to surgical methods at this stage, many growths which would be operable if discovered earlier, have now passed beyond the point where removal is possible.

Dandy, of Baltimore, conceived the idea of filling the ventricles of the brain with a medium which would cast a shadow of these cavities on the X-ray plate. He felt that by so doing the accurate outlines of the ventricles could be obtained, and since a large proportion of neoplasms modify the size or shape of the ventricles, a valuable aid to the early diagnosis and accurate localization of such conditions would be obtained. For practical reasons he selected air as the medium to be injected, the lesser density of the air to contrast on the plate with the greater density of the surrounding brain tissue.

After some of these injections, it was noticed that a portion of the air had passed through natural channels into the subarachnoid space, thus outlining some of the sulci of the brain. The idea was then conceived of substituting air for cerebrospinal fluid through a lumbar puncture and thus showing all parts of the arachnoid space, including the cerebral sulci, the cerebellum and the spinal cord. In pathological conditions affecting these structures, variations in the air shadows may give information as to the nature of such conditions.

The procedure just described has not been as much used as has the method of injection of air into the ventricles. In adults a small opening in the skull is necessary for the injection; in very young children the fontanelle may be made use of for this purpose. An amount of fluid is drawn off from the ventricle exactly equal to the amount of air injected, in order to avoid alteration of the intracranial pressure. By injecting into one lateral ventricle and later carefully turning the head in the proper manner, the air may be made to pass through the foramina of Monroe and through the third ventricle into the opposite lateral ventricle. X-ray studies may thus be made of each of these lateral ventricles separately. Still taking advantage of the fact that the air will rise above the remaining ventricular fluid, we may then turn the head so that the anterior horns will be uppermost and their outlines depicted with accuracy. The posterior horns may then be studied in the same manner, followed by any special positions that may seem applicable to the individual case.

A cerebral tumor of any size is likely to modify the contour of the corresponding lateral ventricle. Differentiation may often be made between cerebral and cerebellar tumors by means of the ventriculogram, showing the symmetrically enlarged lateral ventricles of hydrocephalus in the latter cases.

This work has stimulated widespread interest in the method and may reports of successful diagnoses are to be found in the literature. Dandy himself has collected quite a large series of cases and has published several reports of his investigations.

It is of course understood that air injection into the brain is a procedure not unattended by considerable danger, which should be attempted only by one skilled in brain surgery, as even then it is attended by a very definite risk. Dandy has stated that the procedure entails small risk as compared with exploratory craniotomy and that often the information to be obtained is of far greater value. Other observers do not seem to be entirely unanimous in their opinion as to the justification of the method, except in occasional selected cases, as it is a known fact that several deaths have occurred in the practice of competent brain surgeons which were directly attributable to air injection.

The opportunity has been given the writer to collaborate from the roentgenological standpoint in some of the work of Dr. C. C. Coleman in the study of brain conditions by means of pneumoventriculography, or ventriculo-

graphy, as the method has been termed. It is certainly of value from the diagnostic standpoint and presents possibilities which may increase its value in the future. Interpretation of ventricular shadows should be made with the greatest care and is beset with certain difficulties, but it may be that time and experience will greatly aid in overcoming these difficulties and will increase the ability in some cases to recognize even slight variations from the normal. We feel justified in saying, however, that ventriculography is still on trial and that the last word has not been said either for or against it.

104 *Professional Building.*

SOME POINTS IN THE TREATMENT OF TUMOR OF THE BRAIN.

By C. C. COLEMAN, M. D., F. A. C. S., Richmond, Virginia.
Department Neuro-Surgery, Hospital Division, Medical College of Virginia.

The most striking feature of modern surgery of brain tumor is the growing tendency to adopt operative procedures which directly attack the tumor. It is true that palliative operations will continue to serve a useful purpose in the treatment of tumors of certain types and in others in unknown or inaccessible locations, yet it is a noteworthy fact that in very recent years, many tumors previously considered unsuited to removal are now quite regularly treated by radical extirpation.

In order to plan the successful removal of a brain tumor there must be of necessity an accurate localization of the growth. The preoperative study and localization of brain tumors were formerly made almost exclusively by the neurologist, while the surgeon became responsible for the conduct of the operative procedure and the care of the patient after the operation. Under such an arrangement the surgeon, being familiar with neither the clinical history of the patient nor the evidences of disturbance of brain function, generally faced the situation presented by a tumor of the brain with an attitude either of considerable helplessness or with one which imposed decided limitations upon his well-intended efforts. Much credit is due the neurologist for his keen interest in the subject and for his patience and co-operation while awaiting the arrival of a better surgical technic for intracranial lesions, but the problems of brain tumor localization must also be faced by the surgeon who accepts the responsibility of the operation. However, in many cases of suspected brain tumor the diagnosis will be arrived at only by the combined studies of the neurologist, ophthalmologist and neurological surgeon, often with the assistance of the various associated laboratory workers.

As long as new growths of the brain and its membranes were considered in one large group, without reference to location or histological character, attention was focused mainly on the general space-restricting properties of the growth, and therefore upon the resulting intracranial tension. It is not surprising that the ancient syndrome—headache, choked disc and vomiting, should have been long considered essential features of the diagnosis. While one or all of these symptoms may appear in the course of brain tumor, they are primarily the result of high intracranial tension and not connected with the early development of the tumor itself. Moreover, it is well-known that high intracranial tension often masks the early evidences of tumor, and sometimes produces misleading symptoms which multiply the difficulties of a localizing diagnosis. While the percentage of brain tumors recognized before the onset of general intracranial pressure is undoubtedly rising, in a large majority of cases at the present time, the leading symptoms when first seen by the surgeon are those of advanced intracranial tension. There is some encouragement in the fact that the late diagnosis of cancer, which was formerly recognized only after the onset of cachexia and regional metastases, has been superseded by an early recognition, at a time when treatment offers a chance for recovery. It is likewise true that if the diagnosis of brain tumor is postponed until the development of terminal brain compression, there is no good reason to expect that surgical treatment will give any better results than the treatment of cancer of the lip or breast when diagnosis waits upon widespread metastasis. There is a growing recognition of the fact that tumor of the brain is not a rare condition, and that they often have a life history of many years before producing disabling symptoms.

The rather general employment of the Wassermann test has helped to clear up the confusion of brain tumor with syphilis. Unfortunately, the history of brain tumor pa-

tients, even at the present time, will too often indicate that the diagnosis of gumma was held for months, until the oncoming blindness rendered the patient's condition so desperate as to arouse the suspicion of some intracranial neoplasm. It should be remembered that pressure-producing gumma of the brain is a very rare condition, forming less than four per cent. of certified brain tumors in at least one large series. A patient with a space-restricting lesion of the brain has, therefore, less than four chances out of a hundred to have a gumma, and more than ninety-five chances to have some other form of neoplasm. The fact that the patient has a positive Wassermann does not protect him from brain tumor any more than it does from cancer of the tongue. If there is a choked disc, even though it should be due to the intracranial pressure of gumma, it seems wise to protect vision by a subtemporal decompression, while intensive specific treatment is being administered to relieve the general infection.

The value of spinal puncture in the study of many neurological diseases, naturally led to its employment in the diagnosis of tumor. It is now quite generally known that in the presence of high intracranial tension, the withdrawal of spinal fluid may be followed by a serious risk to the patient; especially is this true if the tumor is subtentorial and is producing a high-tension hydrocephalus. No theorizing is necessary to appreciate the danger which may attend the sudden disturbance of pressure relations about the foramen by withdrawing spinal fluid at lumbar puncture when there is an obstruction of the ventricles. While the dangers of fluid removal are not so great in supratentorial lesions, the effects of general pressure, as shown by choked disc, should generally contra-indicate the employment of spinal puncture.

Spinal puncture may be helpful after the dura is opened in the course of an operation for supratentorial tumor, and when so employed it may reduce the tension to such an extent as to permit the manipulations necessary for exploration or removal of the growth.

The scope of X-ray study of brain tumor has been greatly widened following the introduction of ventriculography by Dandy, who believes that the combination of this method with the clinical study of the patient should make the localization of the tumor possible in every case. In the hands of those less skilled it is hardly probable that ventriculography as an addition to clinical study will solve all the difficulties of localization. Naturally, the procedure is highly technical and, to be of value, it requires not only familiarity with the problems of brain surgery, but also a knowledge of the variations in the air shadows of normal ventricles. The dangers of ventriculography are not definitely known but it is reasonable to believe that there are real risks connected with the procedure, and that these risks will depend upon many factors, some of which are fixed while others are variable. One must be impressed, however, by Dr. Dandy's experience with ventriculography, and it is to be hoped that others interested in the localization of brain tumors may, with increasing experience, find it as valuable a diagnostic aid as does the originator of the method.

With better localization of brain tumors there is an increasing boldness in the operative procedure. Wide excision of infiltrating glioma, formerly considered as unsuited to more than palliative treatment, is now being advocated and practiced with some success. Inasmuch as glioma reaches a fifty per cent. level in most brain tumor series and if successfully removed the patient is permanently relieved, there is a lively interest in surgical treatment of this very frequent type of tumor. Certainly decompression offers little as a rule in the treatment of glioma, and sometimes seems to hasten the onset of a fatal issue. The question of excision of an infiltrating glioma will be determined largely by the extent and location of the growth and the surgeon's ability to cope with the added technical problems arising from a block dissection of brain tissue.

It is generally appreciated that successful technic of operation for the average tumor removal depends upon two things: the control of hemorrhage and the management of intracranial tension. Scalp incisions are practically bloodless if made between two lines of finger pressure, followed by the immediate application of hemostats to the galea. Hemorrhage from the bone is adequately controlled by the use of antiseptic wax. With effective control of hemorrhage from the scalp and bone, the two-stage operation is less frequently employed, but the exercise of great judgment

is required in some cases to determine whether an effort should be made to complete the operation at one stage or whether the flap should be returned to its bed and the attack upon the tumor postponed until a second sitting.

The management of intracranial tension during the operation is at times a problem of formidable dimensions. Very high tension is generally, though not always, due to obstruction of the ventricles, and in such cases the difficulties may be met by ventricular puncture through a small nick in the dura. The cases with high pressure, in which fluid cannot be removed from the ventricles, present most serious pressure difficulties, and great care is necessary to prevent injury of the cerebral cortex after incision of the dura. At this stage we have used spinal puncture with intravenous administration of thirty per cent. sodium chloride solution.

Subtemporal decompression was formerly the main procedure in surgery of brain tumors. While giving way to more radical operations it is not likely that its usefulness in dealing with the pressure effects of certain unlocalizable tumors will be lost sight of. Attention has been called to the fact that the protection of vision by subtemporal decompression results in many cases from the employment of the operation to reduce a choked disc arising from some form of self-limited compression not due to tumor. Naturally, if a tumor is accessible, effort should be made to attack it directly, but if it cannot be localized the patient should not be allowed to become blind from the atrophy following choked disc, or to suffer the terrific headaches of compression, simply because the ideal treatment of extirpation is not possible. All of us have seen great benefit from a properly conducted subtemporal or suboccipital decompression, in unlocalizable or inacessible tumors.

The technic of subtemporal decompression even at the present time varies widely in the hands of different operators and its possible effectiveness is sometimes offset by the commission of major errors in its performance. The vertical incision of Cushing, which has so many advantages, has not entirely superseded the old curved incision which is seen rather frequently at the present time. Time and again attention has been called to the importance of making a low bone defect just above the base of the skull rather than a high one which exposes the motor area. The inadequacy of a small bone opening has been repeatedly emphasized, and the impossibility of relieving pressure, by removing bone without opening the dura, is a fact well-known but sometimes disregarded.

During the operation of subtemporal decompression one may ascertain whether or not the homolateral ventricle is distended, and information of considerable value may thus be obtained. When there is high pressure, the operation may be difficult if one is to avoid contusion of the cerebral cortex which often plugs the dural opening with considerable force. It is important that all bleeding from the scalp, bone and meninges be carefully controlled before the dura is opened and the arrangements should be completed for immediate closure of the muscles after wide incision of the dura. In some traumatic head cases where there is a generous layer of subdural fluid, the likelihood of danger to the cortex is slight and with the escape of fluid the brain recedes from the dural opening, but a dry brain is generally found in tumor when the stage of general pressure is reached, so that the tension must usually be relieved during operation, either by ventricular or spinal puncture.

It is highly desirable that intracranial bleeding from every source be carefully controlled before the wound is closed, so that, if possible, drainage may be dispensed with. In osteoplastic flap operations, we occasionally place one or two extradural drains of rubber tissue, and we have seen no objections to this practice. The closure of the incision in layers is a matter of considerable importance if the flap is to be made secure against the postoperative swelling of the brain tissues. Fine silk seems to be generally preferred as a suture material in cranial operations.

The administration of the anesthetic to patients whose respiratory mechanism is already embarrassed is an important factor in the success of operations for brain tumor. There is a growing tendency to avoid the increase of tension due to ether. Some surgeons, notably Dowman, of Atlanta, employ local anesthesia in a large percentage of operations both for tumor and other intracranial lesions. The experienced anesthetist is able to give a smooth anesthesia even for long tumor operations, and

use only a small amount of ether. By infiltrating the line of incision with novocain and adrenalin the general anesthetic may be dispensed with entirely when the scalp is being sutured, otherwise, a deeper anesthesia by ether must be used at this stage of the operation.

There has been a decided lowering of mortality in operations for brain tumor within the past ten years by efficient teamwork both in diagnosis and surgical treatment, and it is possible to keep the mortality figures of brain tumor operations within the limits usually set for those of serious operations elsewhere.

503 *Professional Building.*

DISCUSSION.

DR. CHAS. M. HAZEN, Richmond: Referring to the X-ray localization of these tumors, it is, of course, based on the charts Dr. Tucker has shown you, and the important thing is to get such projections as will give the exact locality.

In the radiograms which are being passed to you (Case referred by Dr. Tucker), the anterior-posterior view shows a shadow to one side of the median line, and the lateral view places it just posterior to the coronal suture.

Such findings are of value when they coincide with the neurological examination and history. I have here Dr. Tucker's notes on this case: The child is eight years old, attends schools; parents and his one brother are living and well, family history good. He was a full-term baby, teethed and talked normally. It is possible that there was some trauma at birth as the delivery was very rapid, though not instrumental; the result, a bloodclot. There is a history of "attacks," or "weak spells," in which he gets dizzy and somethiing passes before his eyes, he falls, but is not unconscious; they never last more than five minutes and vary from two in a day to one in two weeks. The most important of these was at one year old, when he had a severe convulsion leaving the right side paralyzed for six hours, then another convulsion with return of function. At present his spells are accompanied by headaches in both temples; the right leg gets numb before the attacks come on.

Thus the history of symptoms in right leg agrees with the X-ray localization of a tumor involving the cerebral center for the right leg.

Operation has been recommended in this case, but the parents have not consented.

DR. B. R. TUCKER: It has become apparent that the diagnosis of brain tumor is not a one man job. You have to get a great deal of help. Another thing is that it is not a one day job. It takes about a week to thoroughly go into a brain tumor case, and I wish also to stress again the comparative frequency of brain tumor and how few of them are really sent in with a diagnosis of brain tumor. I get brain tumors with all sorts of diagnoses; the last one was hysteria. It is very important for a man in any line of work to always be on the lookout for signs of increased intracranial pressure, or signs of infiltrating growth, cases that are getting gradual paralysis, or some other physical change by which you may suspect brain tumor.

Much of this work has developed in the last fifteen years, and it is only in the last three or four years that we can say that brain tumor surgery is at all encouraging. I can say though, that in the last fifteen or twenty cases, the results have been distinctly encouraging in that, whereas the mortality is great, a great many of them have been helped, their lives prolonged, and we have some absolute and complete cures, men who are back at work and performing their ordinary lives with absolutely no discomfort. So it is well worth while not to feel hopeless about brain tumors, and to go into them thoroughly.

DR. EMORY HILL, Richmond: In regard to unilateral choked disc, I think I was misunderstood. I stated that it had been said that a chocked disc on one side pointed to a tumor on that side. I do not think it does at all: my understanding is that there is no unilateral character to it at all. It is a thing that happens from general increase in intracranial pressure. I think it would be a great mistake to assume a unilateral choked disc would mean anything whatever as to the side on which the tumor is located.

DR. C. C. COLEMAN, Richmond: It is true that operations for brain tumor often fail to cure the patient. This is likewise true of tumors in other regions of the body. The effects of brain tumor are mechanical and mechanical treatment of the condition is required.

The scope of surgery in the treatment of brain tumor has been rapidly widened, and we may reasonably expect a further extension of surgical treatment to regions of the brain now practically inaccessible. The profession, generally, is beginning to appreciate the fact that the primary mortality of brain tumor operations is not excessively high. If, however, tumors are not removed completely, and in a majority of cases at the present time it is impossible to make a radical removal, then the patient will likely die eventually from brain tumor. On the other hand, we must not lose sight of the palliative benefits of many incomplete operations. This is notably true of cerebellopontine angle tumors where, with an intracapsular removal done reasonably early, the patient is often able to return to his occupation for a number of years.

The early recognition of infiltrating brain tumors, such as glioma, will lead to radical excision with great improvement in the ultimate results. We believe the following points should be emphasized: 1. Careful examination including competent study of the eyegrounds in all patients who complain of headache or other symptoms of brain disturbance. 2. Appreciation of the fact that brain tumor and not gumma is likely to be present when the patient has symptoms of a space-restricting brain lesion. 3. The substitution of a radical exploration based upon careful study and precise diagnosis, rather than a primary subtemporal decompression, unless localization of the tumor is impossible and the patient has not obstructive hydrocephalus.

THE DIFFICULTIES ENCOUNTERED IN THE DIAGNOSIS OF TUBERCULOSIS IN CHILDREN.*

By R. C. CARNAL, M. D., Rochester, N. Y.

The U. S. Bureau of Education in 1912 reported 1,000,000 children under ten years of

*Read at the fifty-third annual meeting of the Medical Society of Virginia, in Norfolk, October 31—November 3, 1922.

age with tuberculosis and 15,000,000 who needed medical attention for physical defects. How many of these children are under your supervision? Are they diagnosed as tuberculosis, bronchitis, or simply bad colds? Early diagnosis means cure, postponed diagnosis, invalidism.

Every doctor has a method of examination, but it is essential to have a routine form of examination as the detection of slight differences is most important.

ROUTINE METHOD OF EXAMINATION FOR TUBERCULOSIS.

1. History
   - Family
   - Present
   - Past
2. Physical examination
   - (a) Inspection
     - Nose
     - Ear
     - Throat
       - Teeth
       - Tonsils
       - Larynx
     - Chest
       - Nourishment
       - Shape
       - Motion
   - (b) Percussion
   - (c) Auscult. Cough
     - Location of physical signs
     - Character of rales
3. Laboratory Findings
4. Diagnosis
   - Advanced Cases
     - Bronchiectasis
     - Asthma
     - Chronic Pneumonia
     - Pulmonary Abscess
5. X-Ray Findings
   - Children
     - Early tuberculosis
     - Focal Infection

There are many conditions in children, both tuberculous and conditions caused by focal infection, which render the diagnoisis even of advanced cases so difficult that we are compelled to use all facts pertaining to the case that we can obtain. A complete and careful history should be procured. Inquire into the home surroundings and environment. The condition of father, mother, brothers and sisters should be noted, especially if tuberculous.

PAST HISTORY.—History of frequent colds, childhood diseases, severe illness, nervousness, nature and amount of food consumed daily.

PRESENT HISTORY.—History of lassitude, variable appetite, colds, cough, occasional afternoon temperature, if child tires more easily than normal. Cough with expectoration, night sweats, loss of weight or, in child, failure to gain weight.

INSPECTION.—Inspection of the mouth; condition of the teeth and gums. Adenoid tissues, enlarged or infected tonsils may cause constitutional symptoms. Examination of the nose frequently demonstrates enlargement of the turbinates; deflection of the septum or presence of polypi, which obstruct the air passages. Discharging ears should have special attention. A smear from a discharging ear will often show the presence of tubercle bacilli.

EXAMINATION.—The child should be stripped to the waist. The chest thoroughly inspected as to the nourishment of muscles. The round rotund chest is the ideal shape, but the shape is not so important as we find tuberclosis in all shapes of chests. Look for cervical glands, scars and sinuses.

LAGGING.—Lagging is best detected by palpation and inspection. Seldom present in tuberculosis in children.

AUSCULTATION.—Usually no signs in the chest; D'Espine sign not important, because not verified by X-ray plate. The cough after expiration is essential and should be a part of the routine examination in every case, rales heard at end of inspiration if present. The aucultatory findings do not help us much in the diagnosis of early tuberculosis in children.

LABORATORY FINDINGS.—Usually no sputum is found. In cases with negative sputum we may sometimes demonstrate bacilli by injecting into a guinea pig. Guinea pig inoculations are also useful in demonstrating bacilli in urine, and discharge from ears. A smear from the larynx is valuable and should be a part of the routine examination. In a few cases the bacilli have been found by this procedure. An examination of the urine will help us in ruling out pyelitis, nephritis, etc.

DIAGNOSIS.—Rule out focal infection, such as infected tonsils, diseased teeth, pyelitis, mitral stenosis, and other heart lesions. Make due allowances for any severe illness from which the child may be recovering. A tuberculin test should be made on each case; if positive, there appears a local reaction which persists for several days.

PULMONARY TUBERCULOSIS.—In pulmonary

tuberculosis symptoms are important as occasional rales at apex or around nipple. X-ray shows increased lineal markings with beading of ascending branches, such as we find in the following two cases:

Case 1. Girl 8 years old. Mother, positive sputum.

Physical Signs.—Poor breathing, apex to base. Few fine rales under left nipple. Otherwise negative.

X-ray Right.—Slight infiltration outward from hilus.

X-ray Left.—Slight infiltration upper half. Beading shows especially under left clavicle.

Schick negative. O. T. Positive. Wassermann and urine negative.

Case 2. Girl 12 years old. Mother, negative. Brother died of tuberculosis.

Physical Signs.—Poor breathing clavicle to 6th rib right and left. Posterior—poor breathing from L. V. S. to bases.

X-ray Right.—Slight beading just above and below hilus.

X-ray Left.—Hilum shadow increased; slight beading just around hilus. Beading under both clavicles.

Schick negative. Positive O. T. Wassermann and urine negative.

Pleurisy With Effusion.—We get distant or absent respiration; flatness. X-ray shows shadows at base, usually with upper surface a curve extending outward and upward toward axilla.

Case 3. Boy age 13. Mother, negative. No history of tuberculosis.

Physical Signs.—Anterior Right: No signs. Left: Rales 3 R. B. to base, also distant breath sounds.

Posterior Right: No signs. Left: Distant breath sounds, and a few rales 4 V. S.-base.

Schick negative. O. T. negative, Wassermann and urine negative.

X-ray.—Dense shadow at base, upper surface a curve extending outward and upward toward axilla.

Lung Abscess.—History of acute illness, especially if operation on nose or throat. X-ray shows dense shadow, usually toward base; only one lung affected and later we may get rarefied area on centre of this shadow, due to formation of cavity. Good illustration by this case:

Case 4. Boy, age 13. Mother negative.

Physical Signs.—Anterior Right: No signs. Left: Few rales in mammary region; harsh breath sounds at 4th rib—W. V. 4-6. Dullness 4-5.

Posterior Right: Dullness apex to 5th rib. Left: No signs.

X-ray Right.—Slight peribronchial infiltration upward from hilus.

X-ray Left.—Slight peribronchial infiltration upward from hilus; hazy shadow middle one-third.

Schick negative. Positive O. T. Wassermann and urine negative.

Bronchiectasis.—Bronchiectasis is also to be differentiated; here the history is of greatest value. No marked constitutional symptoms. Discharge of large amount of foul fetid sputum; at intervals less expectoration. In tuberculosis such large amounts of sputum would usually show bacilli. Bronchiectasis usually affects the bases of both lungs with apices clear on X-ray plate.

Case 5. Boy 5 years old. Mother, negative.

Physical Signs.—Rales mostly bronchial in character, both bases.

X-ray Right: Increased lineal markings extending upward from hilus.

X-ray Left: Same.

Schick negative. Positive O. T. Wassermann and urine negative.

Hilus Tuberculosis.—No signs in chest. We have the symptoms; history; tuberculin test and X-ray to aid us in making the diagnosis of early tuberculosis, but there is no infallible test or group of symptoms on which we can make a positive diagnosis, and often the diagnosis is made by exclusions. The difficulties in making an early diagnosis are numerous. If we can diagnose our cases early, we can cure them, but this is not accepted as the truth by the laymen and many physicians. The parents fight against learning the truth and the doctor hesitates to tell them; which means our curable case will soon be a far advanced one—another life sacrficed. After we have excluded all possibilities of focal infection, heart, kidney, malaria, etc., what else is left to be done except diagnose the case as tuberculosis?

Asthma.—In asthma we get many sibilant and large moist rales in both lungs on quiet respiration and after cough. If it gives rise to diagnostic differences, it will be necessary to wait for a time when asthmatic symptoms

are absent. Heart lesions, which cause congestion of the lungs, especially mitral-stenosis, are at times diagnosed as tuberculosis, but a careful study of our cases should rule out this error.

Conclusions.—A positive diagnosis can be made on one examination, but a negative diagnosis cannot. It is advisable to re-examine all suspicious children, especially those who are under-nourished and who have slight cough and lassitude. Physicians without X-ray machines and laboratories should make tenative diagnosis on symptoms; then watch these children and re-examine from time to time to make sure they are not missing cases with tuberculosis.

Monroe County Tuberculosis Sanatorium.

PNEUMONOCONIOSIS: REPORTS OF CASES.*

By ALFRED L. GRAY, M. D.
and
J. LLOYD TABB, M. D.
Richmond, Va.

This subject has been suggested to the writers by the recent occurrence in their laboratories of two cases of exceptional interest, both from the standpoint of diagnosis and especially from that of the etiology.

By way of recalling the subject to your minds: Pneumonoconiosis, also abbreviated into pneumoconiosis, is the deposit of inhaled foreign material in the lymph nodes and tissues of the lungs and some other organs. According to the nature of the material inhaled, it is of several common varieties: viz., *Anthracosis* from coal dust, *Siderosis* from iron grindings, *Chalicosis* from pottery dust, and *Silicosis* from stone dust.

One of our cases belongs to the anthracosis variety while the other belongs strictly to none of them, but more nearly simulates siderosis than it does the others, both in the nature of the causative material and also in the roentgen picture.

This subject has been dealt with by Dr. D. C. Jarvis in a most interesting report of his roentgenologic and pathologic investigations made on the chests of granite workers of Barre, Vermont, which was published in the *American Journal of Roentgenology*, April, 1922. Extensive studies of pneumonoconiosis have also been carried on by Dr. H. K. Pancoast, of Philadelphia, who studied the chests of workers engaged in various industrial pursuits attended with dust production.

These and other students of the subject are agreed that the appearances shown on the roentgen plate are rather the result of the reaction of the tissues to the presence of the foreign irritating material than to the actual accumulations of the dust particles except that in cases of materials opaque to the roentgen rays the small collections of dust may also appear as dense white spots distributed more or less generally throughout the lung.

Pathological examination reveals the presence of these particles, chiefly in the lymph nodes accompanying the bronchial branches and, as one would suppose, more abundant in the lower portions of the lungs than in the upper, and more abundant in the right than in the left. As a result of the irritating effect of these minute particles when inhaled in large quantities for a considerable length of time, there ensues a fibrosis and thickening of the bronchial and peribronchial tissues. Often these so strongly simulate the lesions produced by influenza, tuberculosis, and various other bronchial and pulmonary affections that differentiation is extremely difficult, if not impossible, when the appearances of the shadows of the lesions are considered without reference to their distribution or the clinical condition and history of the patient.

The distinguishing characteristics whereby one may in most cases correctly diagnose pneumonoconiosis are:

1. The more general distribution of the lesions throughout the lung.
2. Their similarity to each other in shape, density, and general appearance.
3. Their existence in greater numbers in the lower portions of the lungs, especially the right.
4. The absence of clinical history indicative of infection.
5. The absence from the sputa of characteristic bacteria.
6. The rapid disappearance of many of the roentgenographic appearances when the individual is removed for a short period from exposure to the dust inhalations.

The case reports are as follows:

1. *Name*: Mrs. J. B. Age 50. White.

*Read at the fifty-third anual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

Widow. Referred by Dr. G. Paul LaRoque, of Richmond, Va.

Present occupation: Worker in printing establishment.

Chief Complaint: Patient received injury about the chest when a wall of the building in which she was working caved in.

Past History: Patient states that her general health has been good; she does not remember any serious sickness; she has never spit blood nor had other symptoms of tuberculosis.

Her occupations have been as follows: She was a housewife up to the death of her husband, which occurred about three and one-half years ago. She then went to work with a cigarette manufacturing concern and was with them for approximately five months. Her chief duty consisted in handling the packages of cigarettes. The brand of cigarettes handled had much bronze printing on the packages. She then accepted her present position, which is with a large printing firm. This firm prints the packages for the same brand of cigarettes that she handled while at her previous position. The bronze is in a liquid form and some of this is frequently spilled on the floor during handling. This quickly dries, leaving very fine bronze dust. Patient states that after her day's work she can taste the bronze and the sputum has a brownish color. She often washes her mouth and nose to get rid of the dust. She has worked at this place for three years, the usual day being from 7:30 A. M. to 6:00 P. M. She considers her general health good.

X-ray examination: No fractured ribs found. Small dense deposits approximately 2 mm. in diameter are seen scattered in the lungs from the apex to the diaphragm on both sides. The deposits are more numerous in the bases. The condition is probably a pneumonoconiosis.

2. *Name*: S. A. L. Male. Age 35. Married. Nationality: Lithuanian. Referred by Dr. C. B. Crute. Farmville, Va.

Present Occupation: Tailor.

Chief Complaint: Patient has general weakness, nervousness, and a choking sensation on swallowing. He has become alarmed about his condition and imagines he has cancer of the stomach. He has worried a great deal about his condition for the last two months and during this time has lost ten pounds in weight.

Complete examination by his physician, who is experienced in the diagnosis of pulmonary tuberculosis, fails to show signs of this disease. His past history is negative except for an appendectomy twelve years ago, dysentery two years ago, and a mild attack of influenza one year ago. There is no family history of tuberculosis. His previous occupations have been as follows: At the age of eight he came to the United States to live with a brother in Pittsylvania County, Va. From the age of twelve until seventeen he took up tailoring which he has continued until the present time. From eighteen years of age, however, until the age of twenty-four he found very little work at that trade from the month of July until October each year and found employment in the coal mines during the day and would do the tailoring during the night hours. Thus, for four months each year for a period of six years, he was engaged in coal mining. Two years were spent in the U. S. Army as an instrument repairer in the Aviation Corps.

Roentgen Ray findings: Examination of the gastro-intestinal tract reveals adhesions involving the cecum and ascending colon. Plate of chest shows the entire bronchial trees on both sides studded with fine discrete areas of consolidation resembling tubercles, some of which are calcified and many still soft. In view of the general distribution of the consolidated areas, their similarity, their presence in the lower portion of the lungs in greater numbers than in the upper portions, the greater number being on the right side, and especially the absence of clinical evidence of tuberculosis and his occupational history, the diagnosis of pneumonoconiosis of the anthracosis variety is made.

206 *Professional Building.*

DISCUSSION.

DR. R. C. CARNAL, Rochester, N. Y.: This paper is very interesting. In the cases that have come under my observation I find the physical signs similar to tuberculosis, with history of cough, dyspnea, streaked sputum and in some cases hemorrhage and negative sputum. History shows several years' occupation in granite industry.

Diagnosis was made from history, negative sputum and no loss of weight.

I should like to ask Dr. Gray how he differentiated the roentgen-ray film of pneumonoconiosis from tuberculosis.

DR. D. M. MOORE, Stonega: Dr. Gray's paper was very interesting to me from the standpoint of a man from the coal field. The question in our minds in regard to these men is the effect that this coal

dust has on the tuberculous patient. It has been impressed on me in my observation for some time, especially along this line, that we rarely run across a case of tuberculosis in a coal miner. A co-worker with me is making a special study along this line and I would like to ask Dr. Gray what effect coal dust has in the way of protecting a man against the infection with tuberculosis, if there is any. In placing men in these mines, it is our work to look after them, examine them, and see whether or not they are suitable for coal miners. If we get a case of mild tuberculosis it is a question with us whether to send that man into the mine or put him into some work outside. We do not know just yet whether it will set up his tuberculosis, or whether the coal dust will have some preventive or beneficial effect upon his original infection. Personally, I have not seen a death from tuberculosis in a coal miner in the past five years.

Dr. J. H. Hiden, Pungoteague: There are one or two questions I would like to ask. While we are discussing the subject of lung trouble, has anyone heard of any method of treatment by the use of calcium for tuberculosis? In a recent work the author mentioned that people who live in certain sections where there is a good deal of working in calcium were not subject so much to tuberculosis. I would like to know if that is true. I do not know whether it is true or not, or whether it has been thoroughly investigated, but the authority I have referred to seemed to think that the use of calcium in tuberculosis would be very beneficial; that the subject ought to be investigated, but he did not go into the subject much further than that.

In regard to children, of course, that is getting a little off the subject and going back to the preceding discussion. I think that we ought to consider the fact that in a great many of these lung troubles we have a number of factors that enter into ill health, and we ought to try very carefully to eliminate all factors other than that of tuberculosis, in any given case, before we attempt to make any diagnosis.

Dr. E. C. Harper, Catawba Sanatorium: There seems to be considerable difference of opinion among authorities as to whether the occupation of coal mining gives any protection. Dr. Edwards reports in a paper here at this meeting that he has found very little clinical tuberculosis among coal miners. Several noted authorities take the opposite side, that working in a coal mine predisposes an individual to tuberculosis rather than protects him. We have had several coal miners as patients at Catawba but I do not recall any that showed signs of anthracosis on X-ray examination.

I had a very interesting case under my observation recently, an attendant at the Catawba Sanatorium, who had previously worked in a coal mine. One day while at work he had a hemorrhage of one ounce. He was put to bed immediately and on the following day examination revealed what we thought was a case of miliary tuberculosis. His chest throughout was full of large moist rales, and he also showed dullness on percussion throughout the chest. He had no symptoms except a severe pain in the right side. In a few days the man returned to work, but looked sick. X-ray examination showed this man to be suffering with apparent consolidation throughout both lungs. We referred the plates to an expert and he pronounced it coal miners' disease. Repeated sputum examinations on this man have not shown any tubercle bacilli. The suptum, as far as you can see, contains no coal dust, but miscroscopic examination shows carbon deposits throughout. The man at the present time is going ahead with his work. He has practically no symptoms, is apparently not suffering from this condition. The physical findings have cleared up, there are a few rales at the base, but otherwise the lungs are normal on physical examination.

Dr. A. L. Gray: Answering Dr. Carnal, I tried to bring out in my paper that the differential points between the diagnosis of tuberculosis and pneumonoconiosis are, first, the more general distribution throughout the lungs; second, the fact that they are nearly all the same size; third, that they occur chiefly in the lower lobes rather than the upper; fourth, that there is entire absence of any characteristic bacteria, either tubercle bacilli or bacilli of other pulmonary infection; that here is an absence of clinical findings, and especially the history of the patient's occupation. Now I do not believe that in that last plate I showed it is possible at all to make a diagnosis definitely between a general disseminated tuberculous condition and pneumonoconiosis. I reported that the condition looked like tuberculosis, and asked particularly whether or not this patient had any clinical evidence of tuberculosis, whether he was running a temperature, etc. At first I had no history of any coal mining occupation at all; he gave me his occupation as a tailor. There was nothing in that, that I could see to cause his trouble. I reported to the doctor it was one of two things, and after he told me of the occupation, and considering the distribution, we concluded quite positively that it was pneumonoconiosis rather than tuberculosis.

In regard to Dr. Moore's question about coal miners. Dr. D. C. Jarvis has made a most exhaustive study of this subject among granite workers, and of course other occupations have been included in the studies of others. The Tuberculosis Commission reports about eighty per cent. of the deaths of the granite miners, Italians I think they were, as due to tuberculosis. I do not know what the statistics are in regard to coal miners. It seems that Italians are especially susceptible to diminished resistance produced by this occupational pneumonoconiosis. I can not believe that coal dust has any beneficial effect. What Dr. Jarvis recommends is that they select a man, put him to work for a little while and see what his lungs show, then stop it and see what reaction he gets, and determine in that way whether or not he is a suitable man.

REPORT OF A CASE OF TYPHOID FEVER, WITH PERFORATION, ALSO SOME GENERAL OBSERVATIONS ON TYPHOID PERFORATION.*

By R. M. WILEY, M. D., Salem, Va.

I wish to report a case of perforation of the bowel, complicating typhoid fever, in a boy 12 years of age. My story would have greatly enhanced interest, at least, to me, had the patient recovered, but alas, as a great majority of these cases do, he succumbed on the third day following an operation, although his improvement was so marked for two days following the surgical procedure, that the sur-

*Read by title at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

geon and myself both thought his chances for recovery good. As regards this, I will speak more fully, in detail, later on.

I wish not only to report this case, but to speak generally on the subject of "Perforation of the Bowel," because it is the most serious of all the complications of typhoid fever that are commonly met with and, contrary to the popular impression, amongst the profession, has no relation to the severity of the general symptoms, for it occurs as often in mild as in severe cases.

Although I may not have any new or helpful ideas, or be able to shed any new light upon this most important subject, yet I wish to discuss it most earnestly with you, for it is vitally important, because, upon the prompt diagnosis of this condition and the immediate action of the attending physician, hangs the life of his patient, for statistics clearly prove that the prospect of recovery from perforation treated by operation steadily diminishes with each hour that passes after the accident occurs. Consequently, the important thing for us, in the consideration of this dire disaster, is the ability to promptly recognize the condition and act without loss of time.

Now as regards diagnosis: the typical cases are fairly easy to recognize for, when perforation occurs, the symptoms are apt to be ushered in by agonizing pain in the abdomen, usually felt in the appendicular region. The abdominal wall is sensitive to palpation, quickly becomes tense and tympanitic and all the symptoms of a general, diffuse peritonitis may speedily ensue, the pulse becomes rapid and running and collapse may quickly assert itself.

Of course, as you know, in the typical cases these symptoms are preceded by a fall of temperature to normal or sub-normal. In this connection, it is quite important to note that a sudden fall in temperature is not a symptom necessary to the diagnosis of intestinal perforation. On the contrary, there are many cases on record in which a rise of temperature has followed this accident.

The diagnosis of perforation is to be reached by the following signs in addition to those just given. The examining hand, when lightly placed upon the abdominal wall, not only brings out the fact that it is hypersensitive, but that its muscles are unduly tense.

There are several conditions causing pain, which must be carefully excluded before the physician can arrive at the diagnosis of perforation, even if the symptoms and signs just described are present. These are, pneumonia of the bases, diaphragmatic pleurisy, iliac thrombosis, appendicitis and intestinal obstruction. Furthermore, peritonitis may develop from the extension of the inflammatory process in the bowel, or, by reason of the migration of micro-organisms, through those parts of the bowel wall, which have been impaired by the ulcerative process. In such cases, the pain and swelling and diaphragmatic paralysis, may all be present, without being due to perforation; and so closely may the symptoms of perforation be simulated, that operation has been performed, with the discovery that no perforation had occurred.

In July, 1917, I had a case of this sort, in which the diagnosis of perforation was concurred in, not only by the consulting general practitioner, but also by the consulting surgeon. Operation was performed, no perforation found, but, most happily, the patient recovered, thus saving us from a very embarrassing situation.

In some cases, the onset of the perforation is insidious and more difficult to recognize than the typical case just described. Such was the fact in the case of the boy, aged 12, which I will now report.

I was called to see B. F. W. August 26th, 1919, at 3 P. M., and was given the history of the boy's having been feeling ill since August 22nd. Temperature at first visit, 104, spleen enlarged.

From the history and findings, a presumptive diagnosis of typhoid fever was made, which was later confirmed by the clinical course of the disease and a positive widal reaction. Temperature ranged in the evenings from 103-104 and over, for fully four weeks, despite the usual methods of treatment. Occasionally, it went as high as 105; although temperature after the fourth week, declined to between 102 and 103, in the afternoon and evenings, yet it continued to persist without any complications, although I was on the lookout and suspicious of some complication on account of the long and unusual duration of the fever.

During the whole course of the disease, that is, until just before the fatal termination, the

boy maintained a clean moist tongue and never showed any delirium. Other than the high temperature of the first four weeks, and the unusual duration of the fever, which was now beginning its eighth week, there had been no alarming developments until the forenoon of October 7th, when I found, upon my daily visit, that his temperature of 102-1/5 of the preceding evening had dropped to normal that morning. His pulse, instead of decreasing in frequency, had become more rapid, but was not running nor alarming. There was no collapse, and his facial expression was good and natural and was in no sense the typical Hippocratic countenance. He had complained of but little, if any, pain in the belly, but I found, upon palpation of the abdomen, that pressure produced distinct pain, and there was considerable distention, though not very exaggerated.

So you see, that this was a case that belonged to the insidious class of development and was not a typicaal onset, and one might easily be beguiled into thinking it was not a perforation but a condition due to gaseous distention. I am glad to say, however, that I was not so deceived.

Another thing worth mentioning is that in this case muscular rigidity was not marked, as is practically always the case in perforation. I immediately concluded that perforation had occurred, basing my opinion upon the sudden drop of temperature, increased distention of abdomen, with pain and increased pulse rate. I reasoned that, if the so-called crisis had come, with its consequent return of normal temperature, there should be no increase of tympanites, nor should there be abdominal pain, nor increased pulse rate, all of which conditions existed here.

I immediately informed the boy's father, of my opinion and urged that I be permitted to take the boy, at once, to a hospital for operation, explaining that that was his only hope and that each hour of delay added to the danger. Despite my most urgent entreaties, he positively declined, averring that he knew that would kill him. He then requested that I call a certain physician in consultation, which I did promptly, and this consultant, perhaps noting the good facial expression of the boy and absence of signs of collapse, stated as his opinion that no perforation had occurred and no operation was necessary. I still maintained my firm belief and stand that perforation had occurred.

In the afternoon of the same day, the father wished another consultation, this time selecting another physician, who came, examined the patient, consulted with me, and stated, in his opinion, that no perforation had occurred and no operation was necessary.

I still held out, that a perforation had occurred and an operation was necessary, but, of course, under the condition of dissenting opinion, it was not done that day. On the forenoon of the following day, the boy's belly was more distended, and pulse had jumped from 120 to 140, and there was a return of fever, to ninety-nine and a fraction.

By most insistent pleadings, I got the father's consent to remove the boy to a hospital in Roanoke, and, since there was a fatal termination in this case, I will show the same kind consideration that the Roanoke papers do, under like circumstances, and simply say that the patient was removed to a local hospital, for operation. So he was promptly transported, very carefully in an ambulance, to this hospital, where he was operated upon, October 8th. A perforation about ⅛ inch in diameter was found in the ileum, together with a general diffuse septic peritonitis.

I will mention that just before operation, lencocyte count was 4800. At the time of admission to hospital, pulse was very weak and could not, at times, be counted accurately; respiration was rapid, runing to 40 and over.

October 9th, after operation, patient's condition had improved very markedly, pulse could be easily counted and ranged from 120 to 140, and was of fairly good volume, abdominal distention had decidedly lessened, and respiration had improved greatly, ranging from 18 to 20 per minute, and patient, according to nurse's chart, had a very comfortable day.

Friday, October 10th, patient's condition had continued to improve, so much so that pulse, on this date, ranged only from 100 to 120 and all the other symptoms were also improved by the same ratio. We had now begun to be really very hopeful of recovery.

On Saturday morning, October 11th, the third day after operation, our patient suddenly "went to pieces," abdominal distention returned, pulse became running and rapid, res-

piration hurried, vomiting set in, patient's features became pinched, eyes sunken, the characteristic Hippocratic countenance ensuing, and the little fellow "went out" at 3:30 P. M., and a prompt diagnosis, and also an excellent piece of work by the operating surgeon, went for naught.

It is foolish and futile to speculate on what might have been, but Oh, how I wish this case could have been operated upon promptly, the day the perforation occurred!

SPLENECTOMY IN THE TREATMENT OF SPLENIC ANEMIA.*

By EDMUND J. HORGAN, M. D., F. A. C. S., Washington, D. C.

Splenic anemia was first described by Gretsel, in reporting a case from the clinic of Professor Griesinger who had recognized lymphatic anemia and splenic anemia, and who used these names in his clinical dissertations to distinguish them from a large group of pseudoleukemias, so-called. Banti, by collating the pathological studies of Lodi, Concato, and Franzolini, and the clinical studies of Griesinger and Gretsel, and by his clinical observations and necropsy studies on three cases, further separated this disease from a large group of splenomegalies. By his description of a disease which has been given his name, Banti stimulated investigation of diseases of the spleen and particularly of splenic anemia. The term splenic anemia originally included a group of diseases characterized by certain well-known clinical features of unknown etiology, but later, more accurate investigations have brought out finer pathological and etiological discriminations, and from the group called splenic anemia by Griesinger and described by Gretsel and Banti, we have removed Gaucher's disease, haemolytic jaundice, von Jaksch's disease, tuberculosis of the spleen, luetic and malarial splenomegalies, and thrombophlebitis of the portal and splenic veins. As many splenomegalies with anemia have been removed from the group of diseases formerly classified under splenic anemia by having their etiology determined, it is probable that further studies will remove other splenomegalies from our present group.

Banti described splenic anemia as "a disease characterized by a gradual, progressive oligemia of unknown cause, which gives place to marked disturbances of all the organic functions, to edema, hemorrhage, intermittent fever; followed almost always by death; accompanied by a conspicuous tumefaction of the spleen and very often of the liver, the tumefaction independent of any previous morbid state and not accompanied by leukemic changes in the blood. Briefly, splenic anemia is a progressive idiopathic anemia, accompanied by a true idiopathic hypertrophy of the spleen and frequently of the liver, without leukaemia." He divided the progress of the disease into three stages: (1) gradual enlargement of the spleen with secondary anemia; (2) hypertrophy of the liver with diminution in the amount of urine; and (3) reduction in the size of the liver, and ascites.

Banti outlined the prominent symptoms of a group of splenomegalies accompanied by a secondary anemia and included several splenomegalies not within our present group of splenic anemia. Today we consider splenic anemia to be a progressive disease characterized by chronicity; a gradual hypertrophy of the spleen; a secondary anemia with leukopenia; attacks of epigastric pains; a marked tendency to gastro-intestinal hemorrhages; and, in the late stages of the disease, cirrhosis of the liver, jaundice, and ascites. The etiology of splenic anemia is unknown but it is considered that the disease is primarily in the spleen. It has been considered by Banti and others to be of infections origin. The onset is insidious, and the disease is not usually recognized until there has been marked damage in the liver, a secondary anemia with leukopenia, and occasionally, gastro-intestinal hemorrhage. These changes are produced by the elaboration of a toxic substance in the spleen which is carried, by the splenic vein, to the liver and other tissues.

The diagnosis is often difficult as some of the prominent symptoms of splenic anemia are found in other diseases which are frequently encountered. In the late stage of the disease the clinical picture is similar to that of cirrhosis of the liver. In primary cirrhosis of the liver with ascites the spleen is enlarged; in splenic anemia, in the second stage, the liver is enlarged, and in the third stage there is cirrhosis of the liver with ascites, making the clinical picture of these two rather similar, so that there may be difficulty in determining

*Presented at fifty-third annual meeting of the Medical Society of Virginia, Norfolk, October 31-November 3, 1922.

whether the disease is primarily in the liver or in the spleen. Thrombophlebitis of the portal or splenic vein by the production of abdominal ascites, and splenic enlargement present a picture that is similar to the late stage of splenic anemia. A sudden hemorrhage from the gastro-intestinal tract with a previous history of epigastric pain in splenic anemia may lead the clinician to make an erroneous diagnosis of chronic gastric or duodenal ulcer.

SURGERY.

Zaccarelli, in 1549, and Ferrerius, in 1711, have been accredited, by some authors, with removal of the spleen, but these cases have been discredited by others for lack of sufficient detailed records. The earliest authentic case of splenectomy was reported by Quittenbaum, of Rostock, in 1826. Kuchler of Dermstadt, in 1855, and Spencer Wells of London, in 1866, each reported a case of splenectomy. The patients upon whom these first three operations were performed died a few hours afterwards. Pean, in 1867, did the first successful splenectomy from which the patient recovered. From Collier's table of twenty-nine cases of splenectomy reported from 1549 to 1881, we find a mortality rate of 72.4 per cent. Vanverts' thesis of 1897 records 274 cases with 104 deaths, a mortality rate of 37.9 per cent. Modern surgical methods and proper selection of cases have reduced the mortality in splenectomy from all causes. Giffin, in 1921, reported in a series of 73 splenectomies for splenic anemia 9 deaths, a mortality rate of 12.3 per cent. It is obvious that the most favorable cases for splenectomy are those in which the spleen is only slightly enlarged, and where there has been produced only a moderate degree of secondary anemia, and where there has been little damage done to the liver and other tissues; but sometimes a case which at first appeared to be hopeless has been cured by doing a splenectomy even late in the disease. To illustrate what may be accomplished by splenectomy in splenic anemia, I would like to cite two cases; one, an early case; the other, what appeared to be a terminal case, both having been cured by splenectomy.

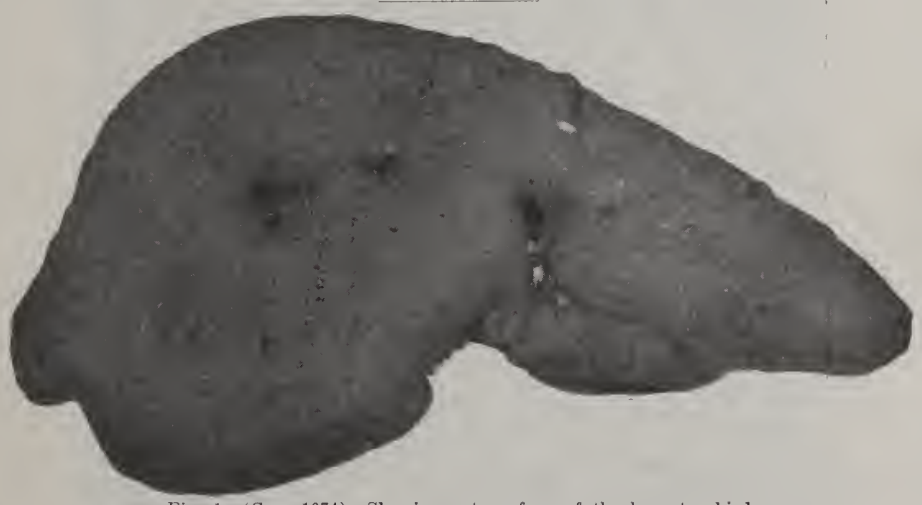


Fig. 1—(Case 1074)—Showing cut surface of the hypertrophied spleen. The small, pearly white spots are the fibrosed germ centers.

CASE 1.—(No. 1074) Mrs. H. N., a housewife, married, age 27, was seen by me in consultation with Dr. L. B. Castell, October 5, 1921, complaining of pain in the epigastrium and lower right quadrant of abdomen, headache, nausea, with burning and distention after eating. Upon examination the spleen was found to be enlarged and presented below the left costal margin. A cytologic study of the blood showed 4,000,000 red cells, 9.600 white cells. The hemoglobin was seventy per cent.

Operation October 6, 1921. Upon exploration of the abdomen the spleen was found to be about six times the normal size. The stomach, duodenum, gall-bladder and ducts did not show evidence of pathological changes. The liver was firm in consistency and the appendix was large, the walls being thickened. The spleen and appendix were removed. The patient has been kept under observation and several blood examinations have been made which have revealed an increase in the red and white

Fig. 2—(Case 1074)—Photomicrograph of section of spleen showing hyalinized fibrosis of the germ center and of the connective tissue stroma about the germ center with diminution of lymphoid cells. Fibrosis is marked throughout.

Fig. 3—(Case 1074)—Photomicrograph showing marked thickening of the capsule with perisplenitis and thickening of trabecula. Marked fibrosis of connective tissue stroma throughout.

cells and a rise in the hemoglobin. When last seen about a month ago the patient was in excellent health.

Case 2.—(No. 1126) Mr. V. B., a real estate broker, single, age 26, was seen in consultation with Drs. Clark and Reeves on January 28, 1922. The patient gave a history of having suffered for 17 years, his illness progressively becoming worse. At the age of 20 he had a gastro-intestinal hemorrhage and another five years later. This last hemorrhage occurred in November 1920. He was seen by a surgeon who made a diagnosis of gastric ulcer for which he did a gastro-enterostomy. January 25, 1921, his abdomen was tapped on account of abdominal ascites, 12 quarts of fluid were

withdrawn. Forty-five subsequent tappings were done. The total amount of fluid removed was 127 gallons. Examination revealed an hypertrophied spleen almost filling the left side of the abdomen. Cytologic study of the blood showed 2,500,000 red cells, and 7,700 white cells. The hemoglobin was 51 per cent. A diagnosis of splenic anemia was made and splenectomy advised.

Operation February 6, 1922. Upon exploration of the abdomen through a left rectus incision a markedly enlarged spleen was encountered and removed. For a few weeks after the operation there was a little fluid in the abdomen. It gradually diminished in quantity and soon discontinued accumulating. The patient gained fifty pounds during the summer, and there has been a steady improvement in the condition of his blood. So interesting is this case, and so gratifying the operative result, that a detailed account will be reported later.

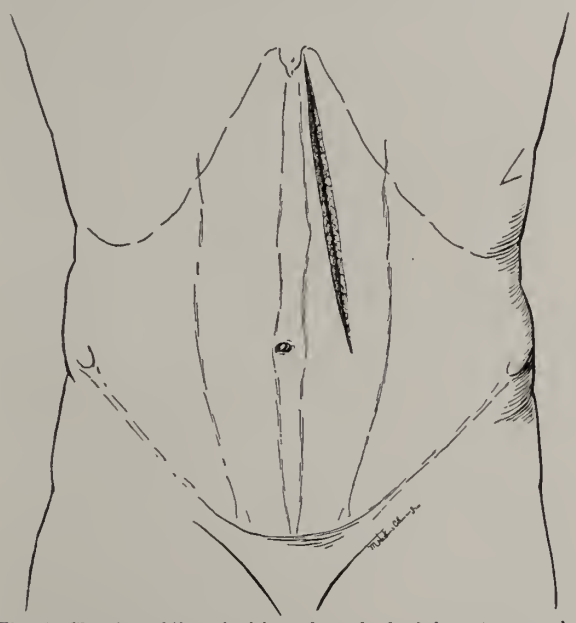


Fig. 4—Showing oblique incision, through the left rectus muscle, used in splenectomy. The incision begins in the notch between the ensiform cartilage and costal margin and extends downward through the left rectus muscle to a point about two inches to the outer side of umbilicus.

Conclusions.

1. Splenic anemia is now conceded to be a surgical disease for which the treatment is splenectomy.

2. The best results are obtained when a splenectomy is done early in the disease, therefore an early recognition is important.

3. Splenectomy performed late in the disease may result in a cure and should be performed if, in the opinion of the surgeon, the physical condition of the patient warrants it.

Bibliography.

1. Banti, G.: Dell' Anemia Splenica, Archivio della Scoula D'Anatomia Patologica, Firenze, 1883, ii, 53-123.
2. Collier, H.: Splenectomy: A Justifiable Operation in Leucocythaemia (?) Lancet 1882, i, Feb. 11, 219-222.
3. Concato: Quoted by Banti.
4. Ferrerius: Quoted by Banti.
5. Franzolini: Quoted by Banti.
6. Giffin, H. Z.: The Present Status of Splenectomy as a Therapeutic Measure. Minnesota Medicine, St. Paul, 1921, iv, 132-138.
7. Gretsel: Ein Fall von Anaemia Splenica bei einem Kinde, Berl. Klin. Woch, 14 Mai, 212-214.
8. Griesinger: Quoted by Gretsel.
9. Kuchler: Quoted by Banti.
10. Lodi: Quoted by Banti.
11. Moynihan, Sir B.: The Spleen and Some of its Diseases. Bristol: John Wright & Sons, 1921, 129 pp.
12. Pean: Quoted by Banti.
13. Quittenbaum: Quoted by Banti.
14. Vanverts, J.: These pour le Doctorat en Medecine de la Splenectomie, 101, Paris Thesis, 1897, 440 pp.
15. Wells, Sir T. S.: On Excision of Enlarged Spleen with a Case in which the Operation was Performed. Medical Times and Gazette, 1866, i, Jan. 6, 2-5.
16. Zaccarelli: Quoted by Banti.

Discussion.

Dr. R. L. Payne, Norfolk: I want to call attention to the number of mistakes that have been made by operators who thought they were looking for some form of cirrhosis, and who did some form of operation in the hope of curing the trouble, when really it lay in the spleen. I am quite certain, from the cases that I have seen, that it is the fault of the operator.

I state this as a word of caution that might well be handed out.

Dr. E. J. Horgan, Washington, D. C. (closing): It is seldom that a case of splenic anemia reaches the surgeon before one or two other diagnoses have been made previously for which mistake the patient has been erroneously treated. Occasionally we get a case of splenic anemia for which, due to an error in diagnosis, the patient has been operated upon as in the second case which I am reporting. This patient had an enlarged spleen and had a sudden severe gastro-intestinal hemorrhage with vomiting of blood. The clinician and surgeon who saw him at that time made a diagnosis of gastric ulcer for which a gastro-enterostomy was done; the splenic anemia continued to progress and the patient gradually grew worse. Had the disease been recognized at that time and a splenectomy performed, the possibility of a cure would have been greater than later in the disease after the liver and other tissues were severely damaged. Since Banti's time several splenomegalies have been removed from the original group. In our present group we may be including more than one variety of splenomegaly.

ON THE MANAGEMENT OF UROLOGICAL CASES.

By JOSEPH F. GEISINGER, M. D., Richmond, Va.

In no branch of surgery has progress in recent years been more definite or more secure than in the genito-urinary field where precision of diagnosis and refinement of technique have now in a signal degree eliminated factors of error and contributed factors of safety in procedures often of live-saving dimensions.

Largely as a result of the expert use of the cystoscope, in conjunction with the X-ray, the determination of genito-urinary conditions has been reduced to a striking degree of exactitude, which in the vast majority of instances leaves no excuse for misinterpretation. In a similar measure, close attention to detail, coupled with the skill and dexterity of the specialist, have robbed even the major operations of their worst dangers, so that, except under most unusual circumstances, the actual surgery of this branch is now approached with considerable satisfaction and confidence. Between these two, however,—the diagnosis and the operation—lies what might be called an intermediate zone, immense but poorly recognized in its possibilities. It is the purpose of this paper to call attention to this zone, with the mere intimation that its proper estimation may not infrequently lead to results which might be epitomized as follows:

1. The conversion of a poor into a good surgical risk.
2. The substitution of a procedure of lesser moment for one greater in magnitude and destructiveness.
3. The entire elimination of surgery in certain cases in which it was until then considered essential and even imperative.
4. The conservation of certain processes (notably pregnancy) too frequently interrupted to relieve renal conditions amenable to less drastic control.

In the average hospital in the past, the diagnosis of a renal condition has been synonymous with the prompt application of a surgical remedy, the precise character of which was usually determined by pre-existing formulae. For instance, a renal calculus accompanied by large amounts of pus in the kidney urine and an absence or great diminution of function commonly meant nephrectomy and loss of a valuable organ: recognition of the fact that not infrequently the infection can be eradicated, the function restored, the calculus removed, and the organ saved, is dependent upon painstaking investigation and patient plodding in the intermediate zone, generally ignored. In such an instance no formula should be allowed to guide the surgeon except one specifically elaborated to meet the particular case in question. When such individualization of patients is undertaken, the full significance of the preliminary period of investigation and preparation will begin to be apparent; for a half-dozen cases of the same general type, varying associated and allied conditions, may necessitate a half-dozen different preliminary steps which will in turn completely alter the aspect of the ultimate procedure in a certain percentage of the number. This is particularly true of renal infections, with or without related pathology.

It is singular for instance that the lesson taught by the preliminary stage of prostatic surgery has not been more generally applied to the urinary tract at higher levels. Today it is probably generally admitted that the actual enucleation of the gland is the least important of the steps in the cure of an individual with a hypertrophied prostate; of vastly more significance are the pre-operative and post-operative periods. When the lesion is transferred to the level of the kidney, however, the operation has again resumed command of the situation and is frequently undertaken without any regard whatsoever to any other consideration. This attitude is as irrational as it is widespread. It is by no means claimed that in all cases preliminary conservative treatment will materially alter the course of events; but in many cases it will do so: and in a few will bring these events to a complete termination short of surgery of any description. Very gradually an appreciation of these facts is beginning to appear in the profession and it is hoped that the future will see a development of this field to the extent it deserves. The specialist in urology is already alive to the situation, and is beginning to plead for more care in preparation and less haste in operation in genito-urinary surgery.

At Stuart Circle Hospital in Richmond, it has long been our practice to subject every renal suspect to an exhaustive investigation for the purpose, first of all of course, of disclosing the condition (and its ramifications

and associations) for which he has to be treated. If this investigation reveals a situation which can in any possible way be affected beneficially by preliminary conservative treatment, such a course is immediately adopted and consumes a few days, a few weeks, or a few months, as may appear necessary. At the conclusion of this stage the type of operative procedure (if any) is determined and adopted—but not until then, for in the meantime essential changes may have occurred making less surgery sufficient, or no surgery necessary, or more surgery possible.

Four cases are here presented in detail, illustrative of four groups. The discussion has been limited to conditions associated with infection. No reference is made for instance to uncomplicated stones in the ureter which, unless of excessive size, are now all treated conservatively in our hospital.

Mrs. C. L. D., white, female, aged 62, para 2.

Chief Complaint: Pain in left side of abdomen.

History Present Illness: For about 3 years patient has had pain in her left side at intervals but her symptoms did not become incapacitating until 7 weeks ago, since which time she has been suffering almost continuously. The attacks of severe pain came on at varying intervals and are sometimes precipitated and always made worse by exercise, and more especially by anything requiring lifting of the left arm. In the intervals between the attacks she suffers a dragging lumbar ache. In the main the pain is dull in quality and is located in the region of the left kidney with radiation to the lower left quadrant of the abdomen and to the left hip. Since she has been confined to bed her discomfort is much less marked in severity. There has been no frequency of urination but considerable burning at times and occasionally some blood. It has been noticeable that the act of voiding sometimes initiated an attack of pain.

General History: Father died of apoplexy, mother of cancer of stomach, and one brother has cardio-vascular disease. Previous personal history entirely negative except occasional flatulence and stubborn constipation.

Examination: Heart, lungs and extremities negative, but patient is old and infirm in general appearance. Pelvis negative. Abdomen presents nothing except marked tenderness anteriorly and posteriorly in region of left kidney which can be quite easily palpated and which seems to be enlarged. Urine contains much pus. White blood cells 10,800, polys 62%, small lymphocytes 35%, large lymphocytes 3%. Urea nitrogen 11 mg. Renal function 27½% of dye output in two hours.

Cystoscopic: Large purulent bladder sediment. Low grade chronic cystitis in anterior segment of base. Ureteral orifices normal in appearance. Kidney specimens showed much pus in both sides (especially left) and colon bacilli on culture. Dye test produced 11% on the right side in 15 minutes and a total absence of function on the left. The X-ray prior to injection of the pelvis revealed a large branching calculus filling the left pelvis and calyces and the bromide pyelogram at the same sitting showed a typical pyonephrosis.

Upon receipt of the laboratory data indicating a serious grade of infection in the supposedly sound side, more specific data was considered essential and two days later a right pyelogram was made. This showed marked ptosis of the kidney with an obstructive angulation in the upper ureter and with rotation and dilatation of the pelvis.

Diagnosis: Left: Pyonephrosis (calculus).
Right: Hydronephrosis (infected).

Comment: The age and infirmity of this patient (the latter due to urinary sepsis) introduced a serious problem in the presence of a dead kidney on one side and on the other a dilated and infected organ which not only was not taking up the burden of its deceased fellow but was actually failing to do even the work expected of it under normal conditions; in other words instead of exhibiting the compensation fortunately so often present in similar cases, it was itself seriously crippled and in need of help. In the opinion of several informal consultants who became interested in this patient, the situation was too precarious to warrant interference and the best outlook for the patient was a policy of general medical supervision without the dangerous assistance of surgery. The case, however, appeared to the writer to present certain possibilities and a tentative effort to effect a radical cure was begun. During a period covering nearly three weeks her general condition was supported and materially improved by ordinary

medical measures, and the local condition in the kidneys was treated by a series of cystoscopic lavages of the pelves, with the hope of removing the infection on the right side and reducing the toxemia from the left. The patient made a slow but steady response; a trace of function began to appear on the left side (1/5 of normal), the function of the right side was carried considerably above the normal level and the infection on this side was entirely eradicated by microscopic and cultural standards. Radical operation was then considered possible.

Operation: Left nephrectomy. The pelvis and calyces were filled with a large branching calculus, and typical pyonephrotic cavities were scattered through the kidney substance.

Post-Operative: The patient made excellent progress until about the 8th day when she developed a temperature and became quite sick. Exploration of her wound, from which the drainage tube had been removed some days previosuly, revealed a pocket of pus at the inferior angle. When this was evacuated and drained, the acute symptoms subsided and she went on to a good recovery. Frequent tests of renal function showed the condition satisfactory. At the time of her discharge from the hospital her bladder urine still showed some pus but her urea nitrogen was 17 mg. and her dye output in two hours 42%, which latter, at her age, would be considered practically normal for two kidneys instead of one recently seriously infected.

Conclusions: 1. A procedure as serious as nephrectomy cannot be undertaken without a thorough exploration of both sides of the urinary tract. In this case the calculus pyonephrosis on the left side clearly, as an isolated proposition, indicated nephrectomy. If this had been hurriedly undertaken without precise information of the condition obtaining on the opposite side, the result would probably have been fatal.

2. The results ultimately secured in this case would appear to justify close attention to the possibilities of preliminary direct treatment pending operations upon the kidney. The desirability of this preliminary stage has been brilliantly demonstrated in relation to the prostate gland. In a comparable degree it is applicable to selected cases in the urinary tract at a higher level. This is not only true as to the successful outcome of the subsequent operative procedure but also as a guide to the type of operative procedure itself, a point illustrated in the following case:

Mrs. E. K. T., white, female, 32, married.

Chief Complaint: Pain in right side.

Two days ago was taken with severe pain in right renal area and now has high fever, rapid pulse, frequent chills, and appears quite sick.

Previous History: 8 years ago she underwent operation for chronic appendicitis for pain in her right side and got no relief. In the following year her uterus was suspended and a right nephropexy was done; gradual but marked relief followed this and she had no more pain in her right side until 8 months ago when she had a severe attack of pyelitis of pregnancy. This together with a contracted bony pelvis and a suspicion of pulmonary tuberculosis made evacuation of the uterus desirable and this was done during the 5th month of pregnancy after catheter drainage of her kidneys had improved her general condition. Subsequent systematic lavage of the renal pelves resulted in a cure of her infection by microscopical and cultural standards. For the past six months she has had no trouble whatsoever. During the past three weeks she has felt somewhat indisposed but paid no attention to this until the present attack began two days ago.

Examination: Patient acutely ill. Exquisite tenderness over right kidney anteriorly and posteriorly.

Temperature 104.2, pulse 120, white cells 21,700, polys 94%, small lymphs 4%. Urine full of pus.

Cystoscopic: Base of bladder edematous, congested and studded with small bullae. Oversize catheters pass easily to both pelves. Clear urine from left side. Thick pus from right side, requiring aspiration which gave immediate relief from pain. Differential function test showed delayed elimination and bare trace of dye excretion on right side and 24% in 15 minutes (normal 15%) from left side. Left kidney urine showed few pus cells and culture was sterile; right urine was all pus and culture showed colon bacilli. Limitation of process to one side suggested some local element rather than simple recurrence of pyelitis which was at first assumed to be the cause of her symptoms. X-ray then made and shadow of calculus size of tip of

index finger seen in right kidney region, which had not been visible in plates made when she was at hospital six months before. Subsequent pyelography definitely located this calculus in lowest calyx and failed to show any evidence of extension of infection into the kidney substance. With the hope of subduing the infection sufficiently to save the kidney and at the same time improve the patient's general condition preparatory to operation, systematic cystoscopic treatment was instituted, including lavages and catheter drainage of the pelvis, for periods varying from 2 to 36 hours. The patient showed steady and marked improvement, pain disappeared and temperature promptly dropped to normal. The amount of pus in the right-urine rapidly diminished and coincidentally the function of this side began to improve and finally reached one-half of a normal reading.

Operation: (12 days after admission). Exposure of right kidney through right lumbar incision. Previous nephropexy made delivery difficult. General condition of kidney apparently good. Pyelotomy in presence of adhesions would have required extensive dissection and in view of precise knowledge of location of calculus, nephrotomy over site of lowest calyx seemed simple and preferable. Stone promptly located and removed and short incision in kidney closed around small tube left in calyx for drainage. Superficial structures closed as usual.

Post-Operative: Temperature from 100 to 101.5 for several days followed by gradual subsidence. Slow but steady convalescence. Cystoscopic review 18 days after operation showed only few pus cells on right side, none on left and negative cultures on both sides. Function on right side at this time still one-half of normal. Total function in 2 hours 56%. Urea nitrogen 18 mg. Discharged on 23rd day with wound solidly healed.

Since leaving the hospital patient has reported at intervals of a month or six weeks for observation. Condition has steadily improved, she is free of all symptoms, gaining in weight and, generally speaking, is thoroughly pleased with the situation. Four days ago a catheterized specimen of bladder urine was free of albumin and pus, and urea nitrogen was 21 mg. and phenolphthalein output 50% in two hours.

Comment: In this case the practically total absence of function, the character of the drainage, and the exceedingly grave constitutional disturbance, all tended to indicate a hopeless situation in the right kidney. The left kidney was showing good compensation and nephrectomy might reasonably have been considered indicated. The absence in the pyelogram of any evidence of pyonephrotic extensions into the kidney substance, while not conclusive of the condition of the organ as a whole, encouraged at least an effort toward conservatism. The result clearly justified this assumption. The steady improvement in the patient changed her from a poor to an excellent risk, and when the operation was finally undertaken the indication of its character was clear-cut,—namely removal of the calculus but not of the kidney.

Mrs. C. B. B., white, female, 27, married, para 2.

Chief Complaint: Pain in left side.

Four days ago patient was taken with severe lumbar pain radiating into her abdomen and hip and down her left thigh. Opiates gave little or no relief. Later she had a chill and a sharp rise of temperature. Since then she has continued to have pain, chills, fever, and nausea and has become acutely ill.

Previous History: Several attacks similar to the present but none as bad as this. Nine months ago was in another hospital for the same trouble but at that time cystoscopic examination resulted in a negative report and no definite diagnosis was ever made. From time to time has had some pain and burning on urination and has 3 or 4 voidings at night. Menstruation normal until last month when there was a prolongation of the flow. Childbearing record negative. Appetite very good until present attack began. Considerable constipation. No history of indigestion. Appendectomy eight years ago. No other previous serious illness except influenza on two occasions. Family record of no significance.

Examination: Face flushed and general appearance is that of very sick woman. Marked tenderness in left upper abdomen. Temperature 105.4. Pulse 136. Urine full of pus. As patient had been under competent observation and palliative treatment for four days without improvement, cystoscopic exploration was considered indicated.

Cystoscopic: Generalized acute basal cystitis with small discrete bullae; bladder very sensi-

tive to manipulation. No. 6 catheters passed through ureters to both pelves; considerable resistance on left side. Pelves irrigated with formaldehyde and patient returned to bed with catheters in position; right catheter withdrawn after 4 hours and left catheter after 9 hours; during this period two additional irrigations of left pelvis were made and drainage from both catheters continued fairly good. Catheter specimens were collected every hour and examined separately; the left urine continued full of pus and colon bacilli; on the right side the pus curve retained a normal level and no bacteria were present in the slide.

The serious condition of the patient did not justify any further manipulative procedures at this sitting with the exception of a simple X-ray examination which was negative for calculi. Following the cystoscopic exploration she continued quite ill and three days later (June 20th) a larger catheter was inserted to the left pelvis which was then irrigated with 1-500 silver nitrate. The right side was not catheterized. Very little reaction resulted: temperature stayed up but nausea subsided and the general condition of the patient was markedly improved. Up to this time the cystoscopic manipulations were necessarily limited to simple procedures designed to save life rather than accumulate data, beyond the primary diagnosis of acute left renal infection. On June 23rd she was again irrigated and a differential function test was done with plugging catheters (No. 8) in both ureters. After an intravenous phenolphtalein injection there was an elimination of 13% from the right side in 15 minutes; and no trace whatsoever from the left side in 25 minutes. The right urine remained negative and the left contained pus 3 plus. The total absence of function and the persistence of high fever indicated a probable severe grade of true renal involvement on the left side. Two days later the left ureter was dilated to accommodate a No. 12 catheter, the silver irrigation was increased in percentage to 1% and the function test was repeated with the result that in 24 minutes the dye began to appear and in the ensuing 15 minutes an unreadable trace was eliminated. Slight as this proved to be it was encouraging and in the meantime the general condition of the patient was improving. On June 28th the left pelvis was again irrigated, the urine showed pus one plus and colon bacilli, and the dye appeared in 8 minutes and in the 15 minutes thereafter 1¼% was eliminated; this was a marked improvement which coincided with the clinical progress of the case. At this sitting a bromide pyelogram was made and resulted in the following report: (Dr. F. M. Hodges) "The left side shows a dilated pelvis and ureter with what appears to be a true stricture in the first part of the ureter. Near one of the upper calyces the kidney structure is destroyed in a small area. I believe the kidney badly damaged but cannot determine to just what extent."

The data was now considered complete and it will be noted that the X-ray evidence conformed with the pyuria, the depression of function, the septic chart, and the general clinical picture in placing this kidney in the group commonly known as surgical and commonly treated by nephrectomy. The progress already made, however, justified further conservatism under close observation. Catheter drainage and irrigation was persisted in and after five additional cystoscopic manipulations the patient was practically well. At that time she was up and about with normal pulse and temperature; pus had disappeared from the left kidney urine which, however, still gave a positive colon culture; all pain had gone and the functional dye output on the damaged side was 8% in 15 minutes—a little more than one-half of normal. On August 4th, seven weeks after admission, she was tentatively discharged with the understanding that she would return subsequently for urinalysis and a final function test and pyelogram. Her recovery has been so complete, however, that she refuses to come within sight of the hospital.

Comment: Upon general surgical principles, early nephrectomy would have been justified in this case. The character of the urine, the condition of the patient, the primary function readings, and the X-ray data united in indicating a hopeless situation, judged by the older standards. The outcome, however, teaches a different lesson. Our experience with this case and certain others of the same type, including two Brewer kidneys with coccal infections and probable infarctions lead us definitely to the following conclusions:

1. Contrary to the previously accepted standards, acute uncomplicated infections of the kidney will, if properly managed, very rarely require surgery.

2. In the presence of such an infection cys-

toscopic exploration, catheter drainage, and lavage of the renal pelvis should be promptly undertaken if there is under ordinary palliative treatment no marked improvement in 48 hours.

3. The acute illness of the patient does not contra-indicate this procedure though it demands care, speed, and extreme gentleness in technique and the avoidance of anything except absolutely essential manipulation.

Mrs. R. T. A., white, female, age 23, married, para 0.

Chief Complaint: Pain in right side.

Several days ago patient developed violent right lumbar pain and since then has been critically ill with nausea, vomiting, chills, fever of 104, rapid pulse, and general evidence of a severe grade of toxic absorption. Urine full of pus.

Patient is now about 4½ months pregnant. A few weeks ago she underwent an operation for sub-acute appendicits and the evidence is not clear that her real trouble at that time was not the onset of pyelitis. Her previous history is otherwise negative and her general physical condition has been very good until the beginning of the present attack.

Immediate cystoscopic examination showed the usual projection of the pregnant uterus into the bladder but the absence of any marked evidence of cystitis except in the trigonal region. No. 10 catheters passed easily through both ureters. Urine was found under great tension in both pelves with a retention of about 1½ ounces on each side. Differential function test showed on appearance of the dye simultaneously from the two sides in 3 minutes with a 20% output in the following 15 minutes from the right side and 30% from the left side, a hyperfunction or hyperpermeability not uncommon at the onset of certain acute renal infections, especially in pregnancy. Both pelves were irrigated with formaldehyde and, in view of the limitation of pain to the right side, the left catheter was then withdrawn. The right catheter was retained in position 24 hours during which time the drainage was very free. Coincidently the patient enjoyed complete relief of pain and temperature dropped from 104 to 100. Examination of a series of specimens from the right catheter produced a pus curve varying from normal to pus three plus—a character of intermittence of great significance as pointed out by the writer in a separate report. A later examination showed essentially the same condition on the opposite side and colon bacilli was found in cultures from both kidneys. A pyelogram showed the characteristic dilatation of both pelves and ureters. Frequent irrigations and drainage of the pelves produced spectacular clinical results and in spite of the long siege ahead the patient was enthusiastic in her desire to preserve the pregnancy and obtain a living child. After the subsidence of the acute symptoms the interval between treatments was lengthened, the patient leaving the hospital and returning to the city at stated periods. Retention disappeared from the left but persisted to the end on the right side. After July 15th, the urine was negative for infection microscopically and culturally. On August 15th, four months after the beginning of treatment, the patient fell down a flight of stairs and precipitated a labor about three weeks ahead of time. Both mother and child survived the ordeal and are now well and happy. One month later the mother presented herself for a final examination which disclosed negative urine and normal function—15% on right and 17% on left side in 15 minutes. It is interesting to note the absence of hyperpermeability at this stage.

Comment: The critical condition of this patient when she entered the hospital, the serious grade of bilateral infection present, and the advanced degree of pelvic retention due to embarrassment of the ureters by the enlarged uterus, apparently made the outlook rather gloomy at mid-pregnancy with 4½ months still to go in the face of these difficulties. Evacuation of the uterus had to be seriously considered and would ordinarily have been done. Conservatism was encouraged by the attitude of the patient, the prompt response to treatment, and the fact that at about this period of pregnancy the uterus is beginning to lift itself out of the pelvis, to some extent at least relieving the ureters of pressure.

The case exhibited is one of a considerable group, the complete study of which has enabled us to become better acquainted with the pathology accompanying pyelitis of pregnancy and the prognosis under appropriate conservative treatment. This data will be presented in full subsequently. The conclusions germane to the present discussion might be stated as follows:

1. Pyelitis of pregnancy is always secondary to ureteral obstruction and the treatment is relief of this condition by ureteral catheterization and drainage.

2. Acuteness of symptoms indicates rather than contraindicates immediate cystoscopic manipulation.

3. Evacuation of the uterus is exceedingly rarely necessary and direct attack upon the kidney, still occasionally proposed, practically never necessary.

Stuart Circle Hospital.

THE RELATION BETWEEN SYPHILIS AND DIABETES MELLITUS.*

By JAMES H. SMITH, M. D., Richmond, Va.

Two diseases as common as syphilis and diabetes would be expected sometimes to occur coincidently merely according to the laws of chance. If this did not happen, we would have to conclude that there was some antagonism between the two, the one protecting the individual from the other. It is necessary, therefore, that something more than occasional coincidence must be shown before any importance can be attached to syphilis as a cause of diabetes.

The literature is not wanting in such claims. Between 1907 and 1916, Warthin and Wilson,[1] studying at autopsy the pathological anatomy of six cases of diabetes, reported syphilitic histological changes in all six, the presence of spirochetes in the myocardium of four, and in the pancreas of one. They thought it very probable that latent syphilis is the chief factor in the production of the form of pancreatitis most frequently associated with diabetes, though diabetes is not always coincident with severe degrees of this type of pancreatitis. This is the point of view of a pathologist, and it is the kind of evidence that commands consideration. Yet, the conclusions do not receive the general endorsement of clinicians.

Futcher's[2] statement is representative of the usual clinical view when he says: In occasional instances, diabetes may be traced to a syphilitic infection.

Williams,[3] in 143 cases of diabetes, obtained only four positive Wassermann reactions. His study of physical signs was equally lacking in evidence suggestive of syphilis.

Mitchell,[4] while admitting that diabetes is relatively infrequently due to syphilis, reports a case of the two coincident conditions at U. S. Army Hospital No. 9. He thinks that great care should be taken to recognize syphilis in the diabetic, not being content with a negative Wassermann reaction. The hope of reward he holds out, however, is limited to checking the further advance of the infectious process, damage already incurred being irreparable.

The case of Mitchell's just referred to, was one of those later reported by Allen and Mitchell,[5] who found syphilis in four of a total of thirty-seven cases of diabetes at the same hospital. From this report it appears that, while the luetic cases were treated with arsphenamin, mercury and iodides, "in no instance did the diabetes run a course different from the average thereafter."

Rosenbloom[6] found evidence of syphilis in seven out of sixty-two cases of diabetes. Five of the seven underwent antiluetic treatment without improvement in carbohydrate tolerance.

Approaching the extreme of opinion opposite to that of Warthin and Wilson, Joslin[7] finds that syphilis is less common in diabetics than in the general population. He states that the statistics of the Peter Bent Brigham Hospital and of von Noorden agree with his own.

Lemann[8] has investigated the matter very carefully, and comes to conclusions contrary to those of Warthin and Wilson. He states that only once in his series of private cases, did anti-syphilitic treatment seem to have any favorable effect on carborhydrate tolerance.

Lemann's report is based on a study of the two conditions in the negro. The objection may come to mind that, while syphilis is abundantly common in the negro, diabetes is rare, possibly indicative of some unusual stability in the matter of carbohydrate metabolism in the negro race. Diabetes in the negro is not so rare as was at one time thought. During a ten year period at the Charity Hospital, New Orleans, Lemann found that there were 135 white diabetics admitted, and fifty-nine negro cases. While the negroes thus furnished only thirty per cent. of the diabetics, as against forty-three per cent. negroes in a total admission of 160,044, manifestly these figures make no case for immunity of the negro to diabetes. We must assume, there-

*Read before the Richmond Academy of Medicine and Surgery, October 24, 1922.

fore, that unless the negro has some unexplained immunity to syphilitic pancreatitis, then in view of the admitted frequency of syphilis in this race, there should be a large incidence of diabetes if syphilitic pancreatitis is at all a frequent cause of diabetes. Lemann concludes that the alternative explanation is more acceptable, viz; that there is no relation between the incidence of diabetes mellitus and syphilis; hence, there is no probable etiologic relation between the two.

I am convinced that the weight of evidence is in favor of these two propositions: That, considering the large numbers of cases of each disease, the coincidence is not great and a causal relationship is infrequent; and that antiluetic treatment does not often improve the diabetic state.

In a series of seventy-nine cases of diabetes seen in private practice, I have found clear evidence of syphilis in only two cases, both of whom had also heart lesions, probably also syphilitic. Both gave histories of the infection and positive Wassermann reactions were obtained. Both were given antiluetic treatment. One rapidly progressed to a fatal ending, dying, I think, of the cardiac effects of aortic regurgitation, and without improvement of carbohydrate tolerance. The other, a recent case, is under treatment. In the series referred to, a Wassermann test was not done in all cases, though in the latter part of the series, it was done almost routinely.

There was a third case in which a positive Wassermann was obtained, which I wish to report in some detail: W. F., a white boy aged 13, was referred by Dr. William R. Martin. He had been living in the country with his parents, and entered the hospital September 7, 1921. He was said to have been sick only for a month, though in view of the insidious onset of this disease, probably it dated somewhat further back without the parents having noticed the child's illness. On admission he was apparently on the verge of coma, as evidenced by the general condition, a carbon dioxide tension of the alveolar air of sixteen mm., and a corresponding figure for the carbon dioxide tension of the blood. Blood sugar was found to be 340 mg. per 100 c.c. A 4-plus Wassermann reaction was reported. This was unexpected, because he was the third of eight children, all healthy except this boy, and there was no history of syphilitic parentage. In spite of extraordinary confidence in the pathologist, Dr. Guy Hopkins, I asked him to repeat the test, which he did with the same result.

Under a fat-free and liberal carboydrate diet, and some bicarbonate of soda, the acidosis improved and the carbon dioxide tension of the alveolar air rose to twenty-nine mm. Cautious attempts were then made to reduce the sugar. About the same time treatment for syphilis was begun. He received two injections of neosalvarsan, 0.3 gms. There was no reaction. On September 27th he was allowed to go home, though not as a matter of choice. He was on a restricted diet, but not one designed to render him sugar-free, and the prognosis was bad. It could not have been worse, as he died on September 28th.

I do not now think this boy had syphilis in any form. In December, 1921, Mason[9] reported that in a series of 168 cases treated at the Royal Victoria Hospital, Montreal, in the previous four years, two cases were observed which gave strongly positive Wassermann reactions of the blood, without a history or other signs or symptoms of a syphilitic infection. Both cases were treated for their supposed syphilitic infection over a short period of time, the Wassermann in each case promptly becoming negative, but with a rapid decline of carbohydrate tolerance in each. Mason concludes that a Wassermann reaction unsupported by other evidence, must be considered conservatively.

I am not prepared to discuss the biochemistry of non-specific Wassermann reactions. Blood with a high lipoidal content, such as often occurs in diabetes, would theoretically be more sensitive to the Wassermann test than blood of normal lipoid content. Whether the tendency can be controlled as Van Saun[10] claims, I do not know. But in the future I shall not look upon a positive Wassermann test in a severe diabetic as an indicaiton for antiluetic treatment, without confirmatory evidence of the specific nature of the reaction.

Conclusions.

1. Syphilis is an infrequent cause of diabetes mellitus.

2. When the two occur in the same patient,

anti-syphilitic treatment does not often improve carbohydrate tolerance.

3. A positive Wassermann reaction is not in itself diagnostic of syphilis in a diabetic of severe grade.

REFERENCES.

1. Warthin, A. S. and Wilson, U. F.: The Coincidence of Latent Syphilis and Diabetes; Am. Jour. Med. Sci., CLII, 157.
2. Futcher, Thomas B.: Osler's System, 2nd Ed., Vol. II, 677.
3. Williams, John R.: Syphilis as a Cause of Diabetes Mellitus; Jour, Am. Med. Asso., 1918, LXX, 365.
4. Mitchell, J. W.: A Case of Diabetes Mellitus with Syphilis; Am. Jour. Med. Sci., CLVII, 700.
5. Allen, F. M. and Mitchell, J. W.: Report of Diabetic Service at U. S. Army General Hospital No. 9 Lakewood, New Jersey; Am. Jour. Med. Sci., CLIX, 25.
6. Rosenbloom, J.: A Study of the Relation between Syphilis and Diabetes Mellitus; Jour. Am. Med. Asso., LXIII, 1232.
7. Joslin E. P.: The Prevention of Diabetes Mellitus: Jour. Am. Med. Asso., LXXVI, 79.
8. Lemann, I. I.: Diabetes Mellitus, Syphilis and the Negro; Am. Jour. Med. Sci., CLXII, 226.
9. Mason, Edward H.: Non-specific Wassermann Reactions in Diabetes Mellitus; Am. Jour. Med. Sci., CLXII, 828.
10. Van Saun, Anna I.: Jour. Med. Res., XXXVII, 205.

A CASE OF TRAUMATIC ASPHYXIA.

By C. S. LAWRENCE, M. D., Winston-Salem, N. C,

Lawrence Hospital, case No. 980. Past history of no importance. Was admitted to hospital 7:00 P. M. December 3. 1921, with the following history. While driving an auto, at a rather rapid rate of speed, he approached a curve in the road, the auto took to the ditch, overturned, and pinioned the driver under the car. He does not remeber how he was rescued but regained consciousness within some thirty minutes after the car had been removed from him. Companions say that the back of the front seat was resting across his chest. Admitted within an hour after accident, pulse 92, temperature 96.2, respiration 28.

PHYSICAL EXAMINATION. A well nourished and developed young white man showing signs of marked distress. Head and scalp, negative. Eyelids somewhat puffed and red. Pupils equal and react to light and accommodation. No paralysis. Forehead, face, and neck extending to points of shoulder, sternal notch in front and trapezius muscle behind show a peculiar bluish red cyanosis with pale spots and other petechial areas resembling minute subcutaneous hemorrhages. Discoloration disappears on pressure.

Chest: Well developed, symmetrical. Respiratory rhythm rapid and shallow, slight expiratory grunt. Breath sounds clear and distinct, no rales in either lung, no dullness on percussion.

Heart: Normal impulse. No increase in dullness, no thrill, nor murmurs, no accentuation. Pulse full, strong and well sustained.

Abdomen: Not distended. no scars, no muscle spasm, no tenderness.

Genito-Urinary: Negative.

Skin: Moist, otherwise healthy, except see above.

Bones and Joints: Negative.

Neuro-Muscular: Quite restless and at times boisterous, has odor of whiskey on breath.

Convalescent Record: December 4, 1921. Eye grounds clear, nerve head normal. Retina clear, vessels normal, sub-conjunctival hemorrhage both eyes. Patient complains of much pain in chest and abdomen. Breath sounds clear.

December 5, 1921. Few moist rales in chest, both sides, meteorism quite marked, patient restless.

December 6, 1921. Patient spat bloody mucus last night and this morning, moist rales base both lungs.

December 12, 1921. All lung conditions cleared, discoloration of skin and sclera much improved, patient feels well. Discharged from hospital.

Traumatic asphyxia is a most distressing condition, both to surgeon and patient. The anxious restless state of the individual with the dusky peculiar color of the skin, including the sub-conjunctival hemorrhages with coughing and raising muco-sanguineous sputum, and painful gaseous distention of the abdomen, demand all the wits of the attending surgeon. The condition, however, is not serious as one is led to believe on observing one's first case. An examination of the literature on this subject shows that the majority, in fact, all cases that recover from the primary injury usually survive the asphyxia (Ruppanner.) The condition is due to a great pressure on the chest causing a back flow of venous blood and stasis in the capillaries. There is not an extravasation of blood into the tissues as one might conclude on seeing a case. Beach has shown this by removing sections of the skin from back

of the neck in his case and examining microscopically all sections proved to be normal. Hunter comes to the same conclusion from animal experimentation.

The limitation of the discoloration to the face, neck and upper chest is due to the lack of valves in the veins of this region (Perthas.)

Green in *Surg. Gyn. & Obstet.*, August, 1922, reports a case and reviews the literature.

TREATMENT: Consists of stimulants, heat to body, fluids and morphine to relieve pain and distress. In the case here reported, we simply made the patient comfortable by the use of morphin and atropin, water copiously, mustard plasters to the chest. We gave pituitrin for the meteroism, magnesium sulphate as a purgative and, after the first few days, general massage.

OBSTETRIC STATISTICS.*

By M. PIERCE RUCKER, M. D., Richmond, Va.

Time was, in the memory of most of us present, when obstetrics was a standardized procedure. Prenatal care consisted of an occasional urine examination.[1] The patient was allowed to deliver herself[2] and, if she failed, forceps were used. If this failed, resort was had to Cesarean section or craniotomy,[3] depending upon the availability of the surgeon. The common complications, eclampsia and antepartum bleeding, were handled along fixed lines, accouchement[4] forcé in the former case, and gauze packing in the latter.[3] If the result was satisfactory, we congratulated ourselves; if otherwise we forgot it with a feeling of satisfaction of having done our duty. What was the sense of worrying when we had done all there was to be done?

Now things have changed. We are in the midst of an obstetrical renaissance. The pregnant woman is thoroughly studied and variations from the normal noted, whether they can be corrected or not. The effect of these variations upon the final outcome opens a large field for inquiry. The same is true in a larger sense in regard to the conduct of labor. When pains start, shall we do anything for the patient's comfort, and if so, what? This question has been a live one since the advent of Gauss' "Dammerschlaf."[5] When the patient reaches the second stage, the modern obstetrician is still further perplexed. Shall the patient be left alone, or shall we terminate matters with pituitary extract,[6] DeLee's prophylactic forceps,[7] Potter's version,[8] or Cesarean section?[9] The choice of an anesthetic is less confusing, but still we have to decide between chloroform,[10] ether,[11] and gas-oxygen.[12] The management of the third stage is very perplexing. Shall we "play hands off,"[13] or shall we guard the uterus with a hand on the fundus?[14] Shall we give pituitary extract, and if so, when; immediately after the birth of the baby,[15] when the placenta separates, or after it is expelled?[16] Shall we give ergot,[17] quinine,[18] or morphin and scopolamin?[17]

If such confusion exists in regard to the management of a "normal" case, what shall we say about the abnormal ones? If the patient has a convulsion, and even today they sometimes have convulsions, shall we treat her according to the Stroganoff[19] method or Cesarean section,[20] or by some method between these two extremes?[21] Shall placenta previa be treated by section,[22] by gauze packing,[23] or by rubber bags?[24] A similar series of questions might be propounded in reference to ablatio placentae,[25] puerperal sepsis,[26] and other complications. Even ruptured uterus offers a choice, sometimes being treated by laparotomy,[27] and sometimes per vaginal packing.[28]

What is the correct answer, if there is any one answer? My own answer is, that in any given case the best method is the one giving greatest ease and comfort to the mother that is consistent with the safety of both patients and the facilities at your disposal. I do not see how you can be more definite with the present state of obstetrical knowledge. The definite answer lies in the future and must depend upon accurately collected data, carefully and impartially studied. It behooves us all, whether we work in large clinics or in the home, to gather this information. The statistics from a large hospital are impressive by reason of the weight of numbers, but the general practitioner has the advantage of knowing his patients better, and of seeing the remote results. The hospital has to be content with the knowledge that the mother and child were discharged well (or otherwise). The more fortunate clinics have social workers who can follow the patients for perhaps a year, but only the general practitioner is in a posi-

*Read at Southwestern Virginia Medical Society, September 13, 1922.

tion to follow the mental and physical development of the child or the late complications of the mother.

An obstetric history need not be an elaborate affair. It should set forth the physical condition of the mother in her pregnancy, especially the condition of the heart, lungs, kidneys, and possible foci of infection. kind of pelvis, condition of the soft parts and, if possible, the blood Wassermann. The presentation, duration and kind of labor, method of delivery, the anesthetic used, the condition of the baby, whether it had to be resuscitated and, if so, by what method, the size of the baby, especially its length, the condition of the perineum and the treatment of the third stage. should be noted. The third paragraph should contain the complications of the puerperium and the findings at the final examination in the fourth to sixth week postpartum. The ultimate results as they concern both mother and child should be noted whenever possible.

While the recording of such data is comparatively simple, the utilization of it is a more difficult task. All the weaknesses and limitations of statistical methods apply to obstetric statistics. In the first place, a word as to the mental attitude of the investigator. In speaking of laboratory investigation, the great Claude Bernard,[29] founder of experimental medicine, said "Put off your imagination as you take off your overcoat, when you enter the laboratory; but put it on again as you do your overcoat when you leave the laboratory. Before the experiment and between whiles, let your imagination wrap you round; put it right away from you during the experiment itself lest it hinder your observing power." In like manner, there is a proper attitude in the domain of statistics, and it should be that of a seeker after truth, rather than that of an advocate. In no branch of medicine do the "units of measurement" vary as much as in obstetrics. The adoption of the international classification of the causes of death has helped a great deal. Yet there is a great variation in the statistical value of what is at first thought a very definite and fixed unit. i. e., a maternal death. A death of a mother from Cesarean section for eclampsia is an entirely different matter from a death from Cesarean section for contracted pelvis at the onset of labor. The death rate from puerperal causes is 50 per cent. greater among negroes than whites.[30] The death rate from puerperal sepsis is many times greater in the urban population than it is in the rural population.[31] Such variations have to be taken into consideration lest your statistics lead you astray.

Studies in infant mortality are subject to even greater variations. Some men report all infant deaths regardless of the intra-uterine age,[32] others all above a denfiite weight or length,[33] others only those at term. This brings us to the question of what constitutes maturity. Obviously, you must use a different standard of measurement for Hindoo babies, for instance, whose normal birth weight is 5 pounds 10 ounces[34] than for Caucasian, whose birth weight averages 7.25 pounds.[10] The negro baby is definitely smaller than the white baby born in the same locality.[35] Such details, as well as the mother's condition, must be taken into consideration in studying infant mortality. When a careful operator[36] reports a fetal mortality of 40 per cent. in Cesarean section, for placenta previa, it does not mean that Cesarean section is a dangerous operation for the baby. Several years ago I reported my first 200 cases of Potter's version,[37] I was careful to state that, while the technique was Potter's, the indications were not; that in nearly every case there was some complication, varying from exhaustion of the mother to neglected shoulder presentation or placenta previa, that enabled me to get consent to terminate labor. Furthermore, 44 per cent. of the infants that died were known to be dead when I first saw the mothers. Yet, my fetal mortality has been repeatedly quoted in proof that Potter's method of performing a version is dangerous for the infant.

Secrist[38] says "Too great care can not be taken to make comparisons legitimate. This is particulary true in the case of statistical comparisons since they are numerical and seemingly exact. A numerical statement of a fact is often taken by the unwary and uninitiated as sufficient proof of its absoluteness and finality, and is made to support predetermined conclusions or premises to which it has no relation." To further quote from the same author[38] concerning crude and corrected co-efficients, "frequently only crude rates are available. To use such co-efficients, however, is

never to be preferred when it is possible to make the appropriate correction. It will be noted that the correction consists essentially in more accurately defining units and in applying each phenomenon rigidly to the conditions producing it. Where this is not done, comparisons for different periods or for a single period for different places are extremely hazardous. The amount of error involved is almost never known and, therefore, provision for it can seldom be made." An example of this is the classical report on the maternal and infant mortality in Newark by Julius Levy.[39] In 1916 the midwives delivered 49 per cent. of the babies in Newark, with seemingly better results than were obtained by physicians. On more careful analysis it is seen that almost one-quarter of the births were of Italian mothers, a notoriously good obstetric risk, and of these 88 per cent. were delivered by midwives. Furthermore, 29.8 per cent. of the births were primiparae, a recognized poor risk as compared with multiparae, and of these 70 per cent. were delivered by physicians. The article is replete with tables of all descriptions, sixteen in number, and yet the only definite information available concerning maternal mortality in the midwife practice is based on "586 (out of 11,446 births for the year) mothers who had received prenatal observation from our Department (the health department) and then were delivered by midwives." In other words, if the health department were efficient, and I have no doubt but that it was, all the mothers with impaired kidneys, lungs and hearts, all with contracted pelves and positive Wassermanns were transferred over to the physician's side. Yet no mention of this is made when these figures are quoted by Holmes[40] and others.[41]

Another common fault with obstetric statistics is that the series reported is not accurately described. For instance, Polak[42] and Beck,[43] either separately or jointly, have reported three series each of 1,000 cases from the same clinic within a period of one year. In the series reported by Polak[42] before the American Gynecological Society in June, 1921, there were four maternal deaths. In the report of Polak and Beck[43] in Philadelphia in October, 1921, there is no mention of maternal deaths, while in May, 1922 Beck[44] reported the third series before the American Gynecological Society with two maternal deaths. One would naturally like to know if these are three separate and distinct series or if there was any overlapping. There is nothing about the two series that have been published to identify them. In the first report[42] there are several amusing errors. In Table I the author, or the type-setter, makes 100 consecutive cases have 106 contracted pelves, and in Table IX, seven deaths in 4,500 deliveries is figured as a mortality of .0015 *per cent.*

Statistics should be relevant to the question under discussion. In "Fads and Fancies in Obstetrics," Holmes[40] comes to the conclusion that modern fads are responsible for the high obstetric mortality and supports his contention by an elaborate table that shows that the maternal mortality was 1.28 per cent. in 1747, 1.9 per cent. in 1847, .92 per cent. in 1856, 1.18 per cent. in 1861, .41 per cent. in 1890, .96 per cent. in 1910, 1.01 per cent. in 1912, .8 per cent. in 1915, and .76 per cent in 1920. The neo-natal mortality was 9.6 per cent. in 1747 (Dublin Lying-in), 9.5 per cent. in 1876 (Moran), 5.8 per cent in 1890 (N. Y. Lying-in), 5.4 per cent. in 1907 (Edwards*), 8.8 per cent. in 1910 (N. Y. Lying-in), 7.86 per cent. in 1912 (N. Y. Lying-in), 6.6 per cent. in 1915 (N. Y. Lying-in), 7.05 per cent. in 1915 (Williams), and 7.03 per cent. (Augustana Hosp. Chicago). If maternal and neo-natal mortality have changed so little in the last 250 years, what have modern fads and fancies to do with it? In further support of his contention he quotes the midwife statistics referred to above.[39]

Perhaps I can best illustrate the variations to which statistics of infant mortality are subjected by considering a concrete example. Since Potter's version has figured so prominently in recent statistics, let us take the versions in my private work in the past year, from September 1, 1921 to September 1, 1922. I have delivered 133 babies by Potter's method. There were five placenta previas, eleven toxic cases with blood pressure from 180 to 220, one prolapsed cord, and two acute hydramnios so that in only 114 cases was version done in accordance with Potter's indications. In these 114 there was one still birth and two infant deaths, or a mortality of 2.63 per cent. For the sake

*In the original (J. A. M. A. LXV: 1336, 1915) the author's name is given as Mary Lee Edward, and the figures as 6.3% instead of 5.4%.

of illustration, however, let us consider the series as a whole. The neo-natal rate for the series as a whole is 9.77 per cent. which is comparable to the rate of 12.71 per cent. Moran[32] obtained in Washington, except that 70 per cent. of Moran's cases were negroes and only three of mine. To make the series comparable to Williams' we must deduct two sets of non-viable twins that were born before the seventh month. The infant mortality then figures 6.98 per cent. against Williams' 7.05 per cent. Brodhead,[45] in discussing Potter's paper before the Alumni Society of the Lying-in Hospital, gives his results in 1,000 consecutive cases as follows: 960 infants lived at least two weeks. Of the forty-five infants that died, thirty died from some cause that could not be prevented which, when deducted, gave him a mortality of 1.5 per cent. to which he added 1 per cent. for conscience sake, I presume, and obtained a figure of 2.5 per cent. with which to compare to Potter's 2.3 per cent. which included all neo-natal deaths for 1921, monsters and all. Applying Brodhead's rule to my series, we would have to deduct one case of marked parenchymatous degeneration of the liver and kidneys in a baby that lived 24 hours, one case of congenital heart disease, one case of large hemorrhage into the right suprarenal capsule whose mother had acute hydramnios, one of hydrocephalus and hydramnios, five premature babies of toxic mothers, and three premature babies and placenta previa. This leaves one case, or a fetal mortality of .75 per cent. plus the arbitrary 1 per cent. or 1.75 per cent.

Apparently, statistical methods have been limited to the consideration of maternal and infant mortality and maternal morbidity as indicated by the mother's temperature. That such information does not give the whole picture, permit me to cite the following case, that of a negro, pregnant for the first time, who entered St. Philip's Hospital, last July, in convulsions. Very little could be learned of her history except that she had had several convulsions. She was put through the usual routine for these cases, morphine, stomach washing with castor oil left in the stomach, colonic irrigation, and 300 c.c. of 20 per cent. glucose solution intravenously, after first removing 200 c.c. of blood. The morphine was continued during the day, but apparently had little effect either upon the convulsions or the respirations. The patient had twelve convulsions after entering the hospital. In the evening the head appeared at the vulva and was lifted off of the perineum with forceps. No anesthetic was necessary. The patient was comatose all night. The next morning she seemed to be in a critical condition. Both sides of the chest were filled with coarse rales. She was dyspnoeic and markedly cyanosed, reminding one of the "flu" patients just before death. Her temperature was 105 in axilla.

With the idea of relieving the cyanosis, oxygen was introduced into the peritoneal cavity until there was tympany over the uterus. I might add that the uterus became as hard as stone. The patient seemed somewhat better and, after two hours, a stomach tube was introduced and three drams of tincture of digitalis were poured into the stomach. By afternoon the patient looked like another being. Her temperature had subsided almost to normal, and the rales had disappeared. The mother made an uneventful recovery. The baby, however, did not do so well. At birth it seemed normal and cried spontaneously. The next morning it began to have general convulsions that persisted for almost a week. Lumbar puncture showed red blood cells and laked blood on the second day and a purulent fluid at the end of the week. Unfortunately, no smears were made. The child had no further convulsions, but remained spastic and took its nourishment poorly. Statistically, the result in this case was perfect, both mother and child leaving the hospital alive. Just how bad it really was, I will be glad to report to you if you will extend to me another invitation some ten years from now.

Conclusions.

1. There are a great many problems in the practical management of cases of labor that are far from being settled.

2. It is the duty of everyone who does obstetrics to keep careful notes and do his part in an effort to standardize obstetric precedures, both for the hospital and for the home.

3. Statistical methods are necessary for the solution of these problems, but they have their limitations and, unless used with fairness and accuracy, are apt to be misleading.

4. For the sake of suffering womanhood, let us keep an open mind, choosing what is good and helpful, and rejecting what is harmful and dangerous.

REFERENCES.

1. Tweedy, E. Hastings, and Wrench, G. T.: Practical Obstetrics, Ed. 4, London 1919, p. 22.
2. American Text-Book of Obstetrics, Philadelphia, 1897, p. 368.
3. Leishman, William; Midwifery, Ed. 4. Philadelphia, Henry C. Lea. 1875, pp. 527 and 392.
4. Williams, J. Whitridge: Obstetrics, New York and London, 1903, p. 708.
5. Gauss, C. J.: Geburten in Kunstlichen Dammerschlaf, Arch. f. Gynak. XLVI: 1402. 1906. abstr., J. A. M. A. XLVII: 76, 1906.
6. Bandler, Samuel W.: The Value of Pituitary Extract in Obstetrics and Gynecology, Am. J. Obst. LXXIII: 77, 1916.
   Tate, M. A.: A Method of Delivery in Normal Cases, Am. J. Obst. & Gynec. III: 61, 1922.
   Cron, R. S.: Indications and Contraindications for the Use of Pituitary Extract in Obstetrics, Am. J. Obst. & Gynec. III: 300, 1922.
7. DeLee, J. B.: The Prophylactic Forceps Operation, Am. J. Obst. & Gynec. I: 34, 1920.
8. Potter. Irving W.: Version, Am. J. Obst. & Gynec. I: 560, 1921.
9. Williams, J. T.: Cesarean Section for Primiparous Breech Presentation, Interstate Med. J. XXII: 384, 1915.
10. Williams, J. Whitridge: Obstetrics, Ed. 4, New York & London, D. Appleton and Co., 1917, pp. 344, 155, 896.
11. DeLee, Joseph B.: Principles and Practice of Obstetrics, Philadelphia, W. B. Saunders Co. 1913, p. 294.
12. Davis, Carl Henry: Painless Childbirth, Eutocia and Nitrous-Oxygen Analgesia, Chicago, Forbes & Co., 1916, p. 49.
13. Little, H. M.: The Least Common Multiple in Obstetrics. Am. J. Obst. & Gynec. II: 67, 1921.
14. DeLee, Joseph B.: Principles and Practice of Obstetrics, Philadelphia, W. B. Saunders Co. 1913, p. 310.
15. Brodhead, G. L. and Langrock, E. G.: A Study of Pituitary Extract at the Beginning of the Third Stage of Labor, Am. J. Obst. & Gynec. III: 170, 1922.
    Ryder, G. H.: The Administration of Pituitrin at the Beginning of the Third Stage of Labor, Am. J. Obst. & Gynec. II: 61, 1921.
16. Potter, Irving W.: Version, Am. J. Obst. & Gynec. I: 560. 1921.
17. Edgar. James C.: Discussion, Am. J. Obst. & Gynec. II: 85, 1921.
18. Strakosch, W.: Zentralbl. f. Gynak. XLV:612, 1921, abstr., J. A. M. A., LXXVI: 1866, June 25, 1921.
19. Stroganoff, W.: Prophylactic Treatment of Eclampsia, Monatschr. f. Geburtsh. u. Gynak. XXIX: abstr. J. A. M. A. LIII:86, July 3, 1909.
20. Davis, Asa B.: Cesarean Section. Bull. Lying-in Hosp. IX:276, 1914.
21. McPherson, Ross: A Consideration of the Pregnancy Toxemia Known as Eclampsia, Am. J. Obst. & Gynec. IV:50, 1922.
22. McPherson, Ross: Treatment of Placenta Previa by Cesarean Section. Bull. Lying-in Hosp. IX; 198, 1914.
23. Schwarz, H.: Mechanism and Treatment of Placenta Previa, Am. J. Obst., LXVI:974, 1912.
24. Winn, John F.: Treatment of Placenta Previa, Am. J. Obst. LXXI:583, 1915.
25. Williams, J. Whitridge: Premature Separation of the Normally Implanted Placenta. Surg., Gynec. & Obstr. XXI:541, 1915
    Holmes, R. W.: Ablatio Placentae, Am. J. Obst. XLIV, 753, 1901.
26. Hilton, O.: Antistreptococcic Serum in Puerperal Fever, Brit. M. J. 1:185, 1920.
    Losee, J. R.: Blood Transfusion in Obstetrics. Med. Rec. XCVII: 265, 1920.
    Miller, Harold A., and Chalfant, Sidney A.: The Treatment of Puerperal Blood Stream Infections by the Means of Arsenobenzol, with a Report of Cases, Am. J. Obst. LXXVIII: 395, 1918,
27. Cornell, Edward L.: Ruptured Uterus Occurring Twice in the Same Patient, Surg., Gynec. & Obst. XXIX: 574, 1919.
28. Martin, J. H.: Rupture of the Uterus in the Fourth Month of Pregnancy: Fetus Forced between Layers of Broad Ligament; Manual Removal of Uterine Contents, Glasgow M. J. LXXXVIII: 214, 1917.
    Schmauch, George: Diagnosis and Treatment of Rupture of Uterus, Surg., Gynec. & Obst. I: 260, 1905.
29. Garrison, Fielding H.: An Introduction to the History of Medicine, Philadelphia, W. B. Saunders Co., 1917, p. 576.
30. Howard, William Travis, Jr.: The Real Risk-Rate of Death to Mothers from Causes Connected with Childbirth, Am. J. Hygiene, I: 197, 1921.
31. Mortality Statistics, 1920, p. 59.
32. Moran, John F.: The Endowment of Childhood from the Obstetric Standpoint, J. A. M. A. LXV: 2224, Dec. 25, 1915.
    Holt, L. Emmett, and Babbitt, Ellen C.: Institutional Mortality of the New-born, J. A. M. A. LXIV: 287, Jan. 23, 1915.
33. Williams, J. Whitridge: The Limitations and Possibilities of Prenatal Care, J. A. M. A. LXIV: 95, January 9, 1915.
34. Das, Kedarnath: Hand-book of Obstetrics, Ed. 2, Calcutta, Butterworth & Co., 1918, p. 117.
35. Riggs, T. F.: A Comparative Study of White and Negro Pelves, with a Consideration of the Size of the Child and its Relation to Presentation and Character of Labor in the Two Races, Johns Hopkins Hosp. Rep. XII: 421, 1904.
36. Davis, E. P.: The Treatment of Placenta Previa, J. A. M. A. LXIII: 290, 1914.
37. Rucker, M. P.: Potter Version, Am. J. Obst. & Gynec. I: 574, 1921.
38. Secrist, Horace: An Introduction to Statistical Methods, New York, The Macmillan Co., 1918, pp. 70, 73.
39. Levy, Julius: The Maternal and Infant Mortality in Midwifery Practice in Newark, N. J., Am. J. Obst. LXXVII: 41, 1918.
40. Holmes, Rudolph W.: The Fads and Fancies of Obstetrics. A Comment on the Pseudoscientific Trend of Modern Obstetrics, Am. J. Obst. & Gynec. II: 225, 1921.
41. Rucker, M. P.: Modern Obstetrics, Southern M. and S. (Charlotte) LXXXIV:5: 1922.
42. Polak, John Osborn: Forced Labor: Its Status in Obstetric Teaching, Am. J. Obst. & Gynec. II: 237, 1921.
43. Polak, J. O., and Beck, A. C.: Present Status of Operative Obstetrics Referring to Abuse of Cesarean Section, Surg., Gynec. & Obst. XXXIV: 566, 1922.
44. Beck, A. C.: Tr. Am. Gynec. Soc. 1922. Published since reading of Dr. Rucker's paper in Amer. J. Obst. and Gynec. IV:623: 1922).
45. Brodhead, George L.: Bull. Lying-in Hosp. XII: 126, 1922.

THE NEGLECTED LATENT FACULTY.

By WM. JOSEPH JONES, M. D., Crozet, Va.

In the VIRGINIA MEDICAL MONTHLY for October, I find a communication by Dr. Stephen Harnsberger, which expresses so well my own thought, I cannot refrain from giving a hearty word of approval, and a sincere commendation of all his ideas. Like Dr. Harnsberger, in my search for knowledge, I have many times stepped beyond precedent. My limited opportunities made it necessary for me to seek to know things, because burdened by a deep realization of my ignorance. Dr. Harnsberger leaned over the boundary line between the scientific and the non-refuted facts of human life, that science might be promoted and humanity benefited. I looked about me, and reached out for such information as I could obtain from anywhere and any source, so that the sick might be healed and my exalted profession be not in any degree compromised. I made use of the "*latent faculties*" within me and ignored precedent, but sedulously guarded professional etiquette and honor. Nevertheless, I profoundly felt the need for higher attainments in my sympathetic, as well as my mental nature.

I am sure the reader will excuse my personalities when he is assured that I have no idea of self-praise or exaltation. My eighty-one years of age, if not my modesty, will exclude me from that which a young man might seek.

When about fifteen years old and while a pupil in an ante bellum "Old Field" school, I commenced the study of medicine under Dr. B. P. Morris, of the county of Amherst. In those days physicians who instructed students and prepared them for college were called *preceptors*. Dr. Morris was a good physician, an educated gentleman, and an intelligent preceptor. He and his pupil joined the Medical Society of Virginia at its session in Lynchburg in 1871. Dr. Morris served well and faithfully his generation in the community in which he practiced and passed into the unknown many years ago, a useful citizen, a skillful and beloved physician, and a Christian gentleman of the highest order.

While under Dr. Morris' tutorship I continued in the community school several years and taught one year before joining the Confederate Army, in April, 1861. I served four years as a private, a hospital steward, and a detailed assistant surgeon. I took the oath of allegiance to the United States government in April, 1865, and entered the University of Virginia as a student of medicine in September of that year. Since the month of June, 1866, I have engaged in the practice of medicine with a degree of success of which I am not ashamed. The sources of my knowledge, little or much, have been medical journals, books and consultations. The latter has imparted most information and pleasure.

Like Dr. Harnsberger. I started out to learn all my capacity would allow, from anybody and any source. Many times, whilst paying respectful attention to suggestions from an unlearned but experienced old woman, I have obtained an idea which aroused the latent faculty within me and pointed the way to the relief of the patient, and may be the cure.

A very wise teacher, many years ago, said to a young man whom he was instructing, "Wisdom is the principal thing; therefore get wisdom; but with all thy getting, get *understanding*." Had the teacher lived in this age of the world he probably would have said to his pupil, "It is very proper to obtain all the scientific knowledge you can, but be sure to mix plenty of common sense with it." This should characterize the medical profession above all other callings in which men and women engage. A true physician, who places proper values on the ethics of his exalted profession, can afford to be lenient and respectful to those he cannot regard his equal in capacity and attainment.

In the autumn of 1868, I was called in consultation with one who was a *so-called* doctor, who, previous to the War Between the States, obtained a license to practice medicine, by applying to the county court, which then was composed of three justices of the peace. The court granted a license on the testimony of three reputable citizens that the applicant was a suitable person to administer medicine to the sick. I found the patient to be a girl who had married, and at less than fifteen years of age, was in the throes of a severe labor. The occiput of the child was presenting and firmly wedged under the pubis, where. I was informed, it had been for two or more hours. The doctor said he thought the brain would have to be taken out, but he had not performed that operation, nor had he witnessed it. I had not yet provided myself with instruments.

Having satisfied myself the child was dead, I proceeded to prepare for my first craniotomy, which I did with a caseknife broken off and ground to a suitable shape, and a pair of canine tooth forceps, which I had in my medical saddle pockets. The young mother made a prompt recovery.

There is a long stride from that day to this. I am not sure that success in the treatment of diseases has kept pace with scientific learning. The latent faculty, or endowment with understanding, has not kept up with the double quick march of the scientific modus operandi of materia medica. The fly blister and flaxseed poultice seemingly held back the skeleton fingers of the demon of death and rescued the patient from the damp walls of the grave. The change to cotton pads and mustard plasters, with outdoor atmosphere, is not a big improvement when tested by comparison of the death rate now and then. The scientific nursing that comes to the suffering ones, like the visits of angels from a better world, and the learned use of splendid pharmacal preparations, composed of tested chemical formulas, should present to this generation larger benefits to humanity. Facts seemingly point to latent faculties quietly sleeping in beds of brain tissues which, if developed by bedside observations and other means of growth, would have kept medicine along on the same plane with the great, and, I may say, wonderful advance in skillful surgery.

Sometimes we know things intuitively, sometimes by observation, and sometimes logical ideas lead on to scientific conclusions. Many years ago, while I was engaged in doing a mine practice, one of the workers asked me to prescribe for muscular pains he was having and which he said was rheumatism. After a few questions, I made a mental diagnosis of myalgia and proceeded to prepare a stimulating liniment for his use. Whilst I was making the mixture he asked, What is rheumatism? I simply replied, I do not know. His face instantly exhibited an expression of lack of faith in my professional ability. I saw at once I had to say or do something to restore confidence, so calling his name, I said, "Mr.——, you are a carpenter?" "Yes, sir." "In your daily work you make use of oak, pine and poplar lumber?" "Yes, sir." "You know the oak, the pine, and the poplar each when you see it?" "Yes, sir." "You know that these different kinds of wood I have mentioned grow out of the same soil?" "Yes, sir." "Now, Mr.——, can you dig into that soil and find out what it is that causes one tree to be oak, another pine, and another poplar?" He understood and reached for his package of medicine with a smile of confidence and satisfaction. It is worth while not to appear too scientific, but "*be all things to all men.*" Be pleasant and chummy. Unbend for the sake of science as well as humanity, but never forget that you are a physician, whose business it is not to prescribe alone for physical ills and obtain a proper fee for it, but to make better citizenship and to raise to a higher plane the moral standards of society, maintaining under all conditions, your personal as well as professional integrity. Medical science does not altogether consist of formulary and deduction. The revelation of truth is as much the result of common sense, as it is a reward of scientific study.

There were two boys who were brothers. They grew to manhood under similar conditions. They worked, played and studied together. Both had around them the good influences of moral and intelligent parentage. Both chose the practice of medicine as their life work. Both graduated at the Jefferson Medical College of Philadelphia. One located in a thriving city; the other in a contiguous county. Both were reported to be unusually well qualified. One was a brilliant success; the other a notable and noted failure. One gave heed to bedside and psychological conditions and family histories. He also placed value on sympathy as well as on the drugs he administered. The other went to text books and magazines with the symptoms of his patients, and adopted the ideas and recommendations of others. The successful brother cultivated his latent faculty. He thought and judged out of his own storehouse of knowledge, acquired by deliberate and diligent study, and the absorption of truth found in consultations and anywhere he could obtain it. Although the other was cultivated in books and the amenities of society, and in the excellences of business and was counted a thorough gentleman and excellent scholar, he was a failure.

A physician cannot acquire too much of the sciences of his profession, but he may be deficient in that mysterious thing called common sense. "A little learning is a dangerous thing"

is a truthful aphorism. It is as true to say that a little common sense is better than no sense. One may absorb much that is scientific, and be destitute of useful knowledge.

I do not know how Dr. Harnsberger defines "*Latent Faculty*," but, as I write, the suggestion comes to me that it is deity in man which makes him more than a vertebrate animal and endows him with possibilities that exceed the physical and develop into complete and genuine manhood.

A physician cannot imbibe too much knowledge, cannot be too ardent a lover of science, but he may disregard his *latent faculty*, hide his native endowments in the blinding sunlight of popular admiration and become a failure in usefulness to the people of his community and a disgrace to his high calling. Every member of the medical profession, including its allowed specialties, should carefully maintain its etiquette and defend its honor, and build a personal character that will shed lustre upon the work of his hands, his mind, and his heart.

THE WAIL OF THE YOUNG.

By STEPHEN HARNSBERGER, M. D., Warrenton, Va.

In foro conscientiae.

The future of any people is shaped by the care and training given childhood and youth. Therefore, having had this truth constantly in mind, the writer has made it a rule to give special attention to the young from birth to adult age, a fact well-known to the communities he has served. If we do not conserve the health of children and do not infuse into their minds and hearts governing moral steadfastness, they are sure in later life to become more or less a burden to themselves and a load on society, and are laid easily corrosive to the cankers of envy and faction which are insidiously and constantly at work. Take the world today. If we except far-off Siam, business, individuals and nations are ill at rest. Dissatisfaction stalks everywhere; and, strangely enough, yet even so we find the hitherto conservative minds of the medical profession "moving contrary with thwart obliquities."

Up to the coming of the past half century, physicians, faithful to their trust, were loved for their constant, thoughful and consistent demeanor; and mothers were wont to rouse their children to look up to and emulate the controlling virtues of the old home-doctor. But pervasive negligence, if you will stop to reflect, is gradually giving form to bluff and unfeeling concern, as professional work increases and fees grow bigger; despite the established fact that kindness and sympathy is what brought the hearts of the suffering world to pay frank homage to the disciples of Aesculapius since the dawn of medical history—obviously an ominous detraction awakening the plaintive wail of the young.

It is a bad failing when the medical profession forfeits sympathy—human devotion—from whatever motive. For as human devotion wanes so will the sick and injured go out with less and less attention and the doctor with an ever-growing aimless attention. This is not alone true in civil practice—it is manifest to the observing person in military service; a thing at once preposterous and mischievous.

Of course it is fair to remark that doctors are human with human weaknesses; and, it is not just to censure all for derelictions of a minority. Still it is well, now and then, to pass these things in review, to jog our insight and refresh our memories to the advantage of keeping ourselves and our services nearer the line of duty approved by conscience and better work accomplished—*lest we all get careless.*

"Be thou as chaste as ice, as pure as snow, thou shalt not escape calumny!" But open disregard of professional courtesies is turning precedent awry and running patients from earnest and qualified public servants to the much censured chiropractors, osteopaths, and other specious palaverers. Where does the fault lie?

As far back as the eighties, I became aware of the serious substantive wrong that hinged on the almost unrestricted influx of foreigners into this country. And several times my views expressed in a newspaper were attacked and ardently opposed. The principal argument against me was that my ancestors were emigrants. That is true but it must be understood *that the emigrants of old were either skilled handicraftsmen or educated persons who came here to remain here;* and that is just what should be the status today. If we had done as our wise forefathers intended, we

would not be called upon, as we now are, to parley with Japan and other distant nations "over the way." America for Americans should be our motto. The very wording "*a home*," used by the advanced thinkers of that day, by implication, if not in plain language, adjured them and those to follow, solemnly, as if under oath, or under penalty of a curse, not to let pass this single and only safe opportunity of securing and preserving to themselves and posterity their longed for liberties.

When our forefathers established this government through trials and bloodshed, they did not purpose that there should ever be a flux of the perversive quota from the nations beyond the waters. America, especially these United States, was primarily intended for a *home* not only for their children and children's children but a *home for the oppressed* elsewhere who would come here to better their condition. to rear their families here, remain here, speak and read our language, help develop our resources—making our interest their interest; and, if necessary, fight for and protect the soil that adopted them. In other words, they were expected to become one as they were one and imbued with all the feelings, in letter and in spirit, that filled their hearts and lives.

But after a few years, as wealth began to grow and greed began to fill the minds of some, selfishness crept in and, under the plausible plea that we needed more laborers to develop the mines, etc., than the natural increase of our native and other reliable population furnished, denationalizing interests, through luring argument and otherwise (perhaps more of the "otherwise"), persuaded those higher up in representation of national affairs that the *cheap* decoy from over the way could alone care for the gain they so greedily craved. Blinded to the favorable opportunity of keeping this country "a home," the doors of entry opened and today, by reason of the presence of the thousands who are here making and piling up wealth for the few, the reliable freemen of the direct descendants of the original freemen are forced to the wall, because they cannot live and save on the scavenger diet and under the compromising surroundings of the dissentious accessions from the factious subjects of other nations. Place and opportuntiy are fostered to those who reap here and every week-end send the sheaf of profit across the way to the tills of unsympathetic foreign lands. It robs our republican sentiments, family requirements and industry of the complement which is ethically and justly our own. No wonder "The Wail of The Young" is heard far and near.

It does not seem enough that we spent our best manhood to save Europe, we seem to forget the tax and torture of the boys who lost all in the great conflict of 1918-1919. Nearly four years have passed and these suffering sons of liberty-loving America are tossed and teased by the ungrateful quiescence of a people who promised everything to induce them to leave home and mother, to protect the homes and mothers on "the other side." Sympathy and devotion ran rampant before they "signed up" and donned the color which forbade release from orders, duty and death. No wonder we hear "The Wail of the Young" from the Atlantic to the Pacific and from the Southern Gulfs to the Northern Lakes!

The old home-loving American laborer, who was contentedly helping in peace and war to make this country invincible and prosperous beyond all other countries, has been thrust to the rear by the hordes of aliens who have no sympathy with our history, institutions or integrity; who take from our law-abiding laborers what our ancestors believed would be theirs throughout time. No wonder we hear "The Wail of The Young" in righteous protest!

It is not unreasonable to think that this laxity of consideration of our present and future happiness and well-being is virtually at the bottom of most of the unrest and discontent which now broadcasts the land. It is also no doubt a factor in creating in the minds of the young a feeling of distrust and disregard for the reason that they are not dealt with on terms of equity by their own government. Their distrust has efficient cause for its being. No wonder we hear "The Wail of The Young" on all sides.

The appointment of Dr. Sawyer, the President's family physician, as co-ordinator of the Government and the vast thousands of disabled vetrans of the World War, still further develops the stain which colors the present administration's attitude towards our youth who

gave all that was best for the honor of this people.

There is a great chasm between the calls of an old woman's attention and the enlarged, widely variant and seriously important demands of war-time practice. It is no disparagement to say that Dr. Sawyer can well fit the one but has not had the classical training which necessarily must be had in adequately caring for and directing the medical and surgical departments of military service. Had he been personally engaged in and actually familiar with the needs of the disabled soldiers, it is a wager between a straw and an elephant that he would have long since warmed up to the importunities of the visible suffering of the boys who lost all in defense of American honor; and, for the sake of forestalling future history from recording the apparent neglect of our butchered manhood who victoriously carried Old Glory over the formidable masonry of the offending nations. It was another mistake of our kind-hearted but myopic president. Mr. Lincoln was kindhearted but Mr. Lincoln was far-sighted—his was always a broad national view, with a vivid comprehension of the strength of love and right as an ever-acting guide.

The Man of Nazareth said: "A new commandment I give you, that ye love one another." Nothing taught or that can enter into the mind of man is of more importance than this one command. Upon it rests not only the spiritual but the temporal stability of society and nations. At the sea-side, Christ told Peter if he desired to show love for his Lord, he must "feed my lambs!" He set a child in the midst of his disciples and told them that it would be better for a man to have a stone about his neck and to be cast into the sea than to offend one of these little ones. Now what does all this mean? It means that our lives must be affirmative, active, living—*and loving*. There can be no variableness or compromise. During the plastic period preceding maturity is the molding of relationships and activities. The faith which is begotten in childhood is the greatest motive power and controlling influence in life. In worldly affairs, as in spiritual, it guides and inspires mankind. Faith is at the bottom of all meritorious conduct and effort. It was faith inspired by the declarations and call of our Congress and Senate that urged our boys to leave the ties of home and its comforts and safety to court hardships and suffering, to keep in balance the nations of Europe. The conception our youth had in the verity of the promise to all who crossed the waters left no doubt in their minds and hearts that they would be cared for in the same true and active spirit in which they responded to the "call to arms." There were no reservations,—they were told in plain English wording that they were, on their return, to get quickly and abundantly the best and lasting care that appreciation and money could command. Have they gotten it? Are they getting it? Alas, in return many are still languishing in pain and without ample food and raiment, not even provided with comfortable housing or beds on which to rest. If this government is to live, it must catch and hold the spirit of the Master in serving and not being served. The richest and most fruitful investment of this country's time and treasure *is on the young*.

The neglect of our young manhood in this country is the most fatal mistake of the times. Not only that but wisdom and inspiration come from association with them. Can we point to ourselves as a Christian people? We are closing many doors of opportunity to them when we surround them with devitalizing negligence and its degrading influences. Let us revitalize our treatment and demeanor toward these unfortunate wards of the nation, by revitalizing our politics and policies. There is danger of this country falling under the weight of its own political chicanery.

It is a sad day in this country's history when our youth lose faith. No wonder these suffering boys are discouraged and disgusted. No wonder their families, especially their brothers and sisters, are wavering in affection for a people who promised everything in advance and when the "affair" is over, refuse through lingering negligence to do anything to calm their minds, fill their veins or ease the pains that torture both body and mind by day and by night! No wonder we hear "The Wail of The Young" on every side.

We are told that this government was founded to guarantee to posterity life, liberty and the pursuit of happiness. What men clamored for in 1776, the young of 1922 clamor for now. Men then yearned to be freed from oppressive governments—the young now yearn

to be freed from mental and physical disabilities imposed by an unsympathetic government.

"In Rama was there a voice heard, lamentation and weeping." Matt. 11-18. The earnest prayer from the hearts of the young is, "Give us health and fixation of character that we may have dominion over things confused and transient." It is up to the government, the people who vote and legislate, to now come to the rescue of the young who are clamoring to be fitted for the task that is to fall to them, if they are only permitted to live in health and happiness. This era is flush with thoughts of the future. We cannot ignore it; nor can we pass it lightly. We must realize that something constructive must be done to *hold inviolable the ideals of our fathers.*

The sacrifices and heart influences of mothers in the days gone by made men and women whose works were guided by the promptings of conscience and 'trust in God." We cannot "legislate Sanctity" into humanity, to quote another. Reforms, or the doing away with the need of reforms, must begin at the Christian mother's knee, be cultivated in the schools and nurtured to full efficiency in the churches. The front pews in the churches, not way back, are perfect molding places for the young and old every Sabbath and every week-day service. Begin early and the habit will hold true to the acknowledgment now as it did in the days of our noble and faithful fore-fathers, notably the Puritans. Some can perhaps remember when people went to church to worship; now the fewer numbers who go to church go more often for less worthy reasons. People today lack that eagerness for spiritual gain which so forcibly marked the lives of past generations. As we increase the means that light our way with artificial lights, it seems that we feel less in need of the true spiritual light. Let the churches get awake and take on new life in the interest of the Master. The young are knocking at the doors of every heart; harbor them, instill in them an idea, an ideal, a hope that they may develop and fix within themselves the only enduring "life-buoy" character and vision. *We owe it to them.*

It has been said that "verse embalms virtue," therefore, *let us learn* to say as Milton versed:

"His starry helm, unbuckled, showed him prime
In manhood, where youth ended."

We owe it to them.

"Ill fares the land, to hastening ills a prey,
Where wealth accumulates and men decay."

"There isn't a boy but wants to grow
Manly and true at heart.
And every lad would like to know
The secret we impart.
He doesn't desire to slack, or shirk—
Oh! haven't you heard him plead?
He'll follow a man at play or work,
If only the man will lead.

"Where are the men to lend a hand?
Echo it far and wide,
Men who will rise in every land,
Bridging the 'Great Divide.'
Nation and flag and tongue unite
Joining each class and creed.
Here are the boys who would do right
But where are the men to lead?"

Proceedings of Societies

Report of Delegates from Virginia to the American Medical Association Meeting.

The St. Louis meeting of the American Medical Association was largely attended, the recorded number being 5,174.

The most elaborate arrangements made by a splendid organization of the doctors of St. Louis and their wives, left nothing undone to care for the convenience, comfort and pleasure of the visiting throngs.

The exhibits from various clinics, and business houses, were of a high class of excellence.

The fifteen sections of the Scientific Assembly with a large variety of high class papers, had well attended and enthusiastic meetings.

Virginia's delegation was not as large as it should have been. Those who attended were deeply impressed by the magnitude and vital importance of the work of the Association and greatly pleased with the systematic and thorough manner in which its intricate affairs were conducted.

The House of Delegates was composed of representatives from forty-four States and the District of Columbia, from the fifteen Scientific Sections, from Hawaii and Porto Rico, and from the Army, Navy, and Public Health Service.

The body was presided over by a speaker elected from its membership. Its regular sessions covered Monday and Tuesday mornings, and Thursday afternoon, during which time an enormous amount of work was accomplished.

All matters coming before the House, most of it in printed form, and including reports of officers, councils, and committees, and also new business, were referred without debate to nine reference committees.

These reference committees, after fully considering the various items, compiled their reports, which came back to the House on Tuesday and Thursday, and were then discussed and duly disposed of.

In the reports of the officers it was disclosed that the present membership of the Association is 89,048, with a fellowship of the Scientific Assembly of 53,-022 each showing a substantial increase over the previous year.

The splendid quarters of the organization in Chicago are being enlarged by a substantial addition.

The trustees were authorized to reduce the dues as soon as feasible.

A magazine for lay readers is being arranged for and will appear soon after the first of the year. This will be a great help in the fight against all forms of Quackery.

A committee of prominent surgeons was appointed to prepare material for instruction of the medical profession on Cancer Education.

The report of the Council of Medical Education showed that in 1906 there were 162 medical colleges in the United States, more than in all of the rest of the world. By consolidation and elimination, the number has been reduced to eighty-two, with a much higher standard of teaching and greatly improved facilities.

The Council finds certain problems facing the profession as follows:

1. Medical Schools are not able to take care of all applicants.
2. The cost of medical education has greatly increased.
3. There is an increased tendency to specialization.
4. There is a shortage of general practitioners.

It is suggested that the schools should give a more general training to the students and rely on the post-graduate institutions for the training of specialists.

There is no general shortage of doctors.

Investigation shows that there is an over-supply in the cities with a correspondingly small number in the rural districts, sixty-three per cent. being in cities of 5,000 population and over and only thirty-seven per cent. in communities of less than 5,000.

There is no call for special methods to swell the ranks of the profession, and no need for retrogression in educational standards.

There are several causes for the move of doctors from country to city, among which may be cited (a) less sickness on account of better sanitation, (b) better class of patients by the aid of good roads and improved transportation go to cities for much of their medical attention, (c) this leaves the country doctors with only emergency and poorer patients and, therefore, (d) they receive minor income for maximum efforts, (e) country doctors also prefer moving to cities on account of conveniences and facilities.

This presents an economical problem which must be worked out. Better roads, better facilities, and better pay will aid in the solution.

The various State Boards are urged to require a one-year compulsory hospital service.

On the question of the use of alcoholic liquors in medicine, the House reversed its former action, and passed a strong resolution calling on the National Authorities, to so modify their ruling as to permit more discretion on the part of doctors in prescribing.

A strong protest was made against training of ex-soldiers in Chiropractic humbuggery.

The House went on record as opposing all forms of State Medicine, except the work of the Army, Navy, and Public Health Service and that necessary for the control of communicable diseases and treatment of the mentally deficient and indigent.

A resolution was adopted opposing the Sheppard-Towner bill.

Considerable attention was paid to the question of periodical medical examinations of supposedly healthy persons and it was suggested that regular forms be provided and that the various local societies notify the public as to the advisability of such examinations by competent physicians.

A commission was authorized to collect and disseminate reliable data and information in regard to the methods of the various systems of drugless therapy, such commission to be composed of representatives from the American Medical Association, Carnegie Foundation, The Association of American Universities, National Educational Association, and Federation of State Medical Boards.

Congress was urged to provide for the proper pensioning of disabled medical reserve officers.

A resolution was passed approving the formation of a Woman's Auxiliary of the American Medical Association, which carries with it also the formation of branch organizations in the several States with units in cities and counties.

After a close contest between San Francisco and Atlantic City, the House of Delegates decided to hold the 1923 meeting in the former place.

Respectfully submitted,

SOUTHGATE LEIGH
J. T. BUXTON

Delegates.

Medical Society of Virginia.

REPORT OF CONFERENCE COMMITTEE APPOINTED AT THE LAST MEETING OF THE MEDICAL SOCIETY OF VIRGINIA, TO CONSIDER THE NURSE SITUATION IN THE STATE, WITH A LIKE COMMITTE FROM THE STATE NURSES' ASSOCIATION.

This Conference Committee, composed of representatives from the Medical Society of Virginia and the State Nurses' Association, held four meetings, and disscussed, in all its phases, the present status of nursing in the State of Virginia, regarding both the feasibility of reducing the Nurse-Training Course and the law recently enacted regarding Licensed Attendants.

It was resolved to do nothing with the present established Nurse Training-Course, but as the new law regarding Licensed Attendants was only a skeleton one in its requirements, and as the State Board of Nurse Examiners was the only legal medium through which it could be put into operation, the Committee voted to submit to the State Board of Nurse Examiners for the use of any hospital desiring to establish a school for Licensed Attendants, the following recommendations, after having gone on record as favoring the establishment of schools for Licensed Attendants, and approving the law passed by the recent Legislature:

1. It recommends that the duration of the course be one year, of twelve months, all of which shall be served in the same hospital, at the end of which time, if the work has been satisfactory to the authorities of the hospital, the pupil will receive a certificate as trained attendant, which entitles the graduate to take an examination before the State Board of Nurse Examiners, which, if passed, entitles her to a certificate of "Licensed Attendant";
2. Schools of this kind to be opened in any hospital of ten beds or more, but recommends that this course be not given in hospitals which are now conducting a successful school for regular trained nurses;
3. A school of this kind must be supervised by at least one graduate nurse;
4. Pupils must be between the ages of 18 and 45, giving evidence of good moral character, physically able, and a preliminary education equal to the eighth grade in the public schools;
5. Classes may be formed twice each year, with one month probation period;
6. Hospitals to furnish living expenses, uniforms, books and an allowance of not less than $5.00 per month;
7. This Committee recommends to the physicians

of the State of Virginia and the nurses of the State, and the public in general, that the pay for Licensed Attendants be not more than $18.00 per week;

8. It is recommended that a special uniform be designed and copy-patented, and used throughout all the schools in the State, and used after graduation;

9. The course of study to include the following:

a. Qualifications, deportment and personal hygiene;

b. General hygiene, care of the home, cleanliness, ventilation, sanitation, disposal of waste, germ theory, household and sick room.

c. Food, care and preparation, plain cooking for the family and the sick;

d. Ethics, etiquette of the sick room, adaptability to sick room and the family;

e. Everyday care for the sick: Bed making, lifting, moving, rubbing, special arrangements for comfort, prevention of bed sores, cleansing and sponge baths;

f. Methods of disinfection and sterilization of utensils;

g. Temperature, pulse, respiration, observation of urines, defecations, record keeping, etc.;

h. Treatment: Enemata, douches, catheterization, fomentation, poultices, etc.;

i. Giving of medicines, and instructions regarding antidotes for common poisons;

j. Care and feeding of children, well and ill;

k. Elementary nursing in maternity cases;

l. Special invalid cooking and serving of food;

m. Bandaging;

n. Emergencies, medical and surgical;

o. Text book recommended: "Practical Home Nursing" by Louise Henderson, R. N., Published by the MacMillan Company, New York City.

J. Allison Hodges, M. D.
Chairman.

R. C. Fravel, M. D.
Secretary.

June 21, 1921, Richmond, Va.

The Virginia State Board of Medical Examiners,

At its semi-annual meeting in Richmond, in December, granted licenses to practice medicine in this State to the following:

Dr. Joseph Coates, Richmond, Va.
Dr. Christopher C. Cooke, Richmond, Va.
Dr. Dorothy Edwards, Norfolk, Va.
Dr. Vernon L. Eley, Woodland, N. C.
Dr. Katharine Havard, Norfolk, Va.
Dr. Bayard Taylor Horton, Charlottesville, Va.
Dr. William Banks Huff, Roanoke, Va.
Dr. William Irwin Prichard, Brooklyn, N. Y.
Dr. J. Judson Sale, Fredericksburg, Va.

These represented six schools of graduation, there being two each from the Medical College of Virginia, University of Virginia, and Cornell University, and one each from Jefferson Medical College, University of Maryland and Howard University.

The following were licensed through reciprocity:

Dr. E. H. Alderman, Williamsburg, Va.
Dr. James Augustus Bailey, Cape Charles, Va.
Dr. M. Stone Duling, Boissevain, Va.
Dr. Lee Andrew Gill, Washington, D. C.
Dr. Albert Earle Holmes, Salem, Va.
Dr. Henry Clay Lacy, New Brighton, Pa.
Dr. Arthur Wells Lowman, Stonega, Va.
Dr. Floy Emogene Lyon, Burkeville, Va.
Dr. Helene Soetch Michel, Blacksburg, Va.
Dr. Frank Moseley, Williamson, West Va.
Dr. W. W. Rowan, Andover, Va.
Dr. E. R. Stillman, Goshen, Va.
Dr. M. H. Williams, Roanoke, Va.
Dr. James F. Williams, Richmond, Va.

The Albemarle County Medical Society,

At its annual meeting, elected Dr. H. S. Hedges, president, Dr. John H. Neff, vice-president, and re-elected Dr. F. C. McCue secretary-treasurer. All are of Charlottesville.

Analyses, Selections, Etc.

Bacterial Endocarditis as a Sequel to Syphilitic Valve Defect.

From the Department of Medicine, University of California Medical School. Briggs reports a case of patient suffering from typical syphilitic aortitis. One year later the patient enters the hospital with a non-hemolytic streptococcic endocarditis which pursues the usual course and terminates in death. Necropsy shows involvement of the aortic ring, together with an acute verrucose endocarditis of all the aortic cusps and perforation of one, with an extension into one mitral leaflet.

From a study of the literature it seems that the sequence of bacterial endocarditis on a syphilitic endocarditis is a decided rarity. (LeRoy H. Briggs, American Journal of the Medical Sciences, August, 1922).

Diagnosis of Early Syphilis.

From the Section on Dermatology and Syphilology, Mayo Clinic and the Mayo Foundation.

A study of 231 cases of early syphilis, largely untreated, yields the following observations bearing on the diagnosis of early stages of the disease.

1. The diagnosis of early syphilis has be-

come a laboratory problem, divided between the dark-field examination and the Wassermann reaction. Clinical criteria, while interesting, have lost most of their final diagnostic value. The primary stage especially should no longer be overemphasized in teaching.

2. The dark-field examination showed fifty-five to sixty-five per cent. of all genital lesions to be chancres outright.

3. In our consecutive series, irrespective of age, sixty-six per cent. yielded positive dark-fields; eighty per cent. were positive the first week and none were positive after the ninth week.

4. Seventy per cent. of the Wassermann tests made in the second week of the chancre were positive.

5. The dark-field detected spirochete pallida in twenty-three of the twenty-four moist secondary lesions, and in five of seven Wassermann negative, early, or recurrent secondary cases.

6. The dark-field on treated primary lesions is not hopeless. Eleven of seventeen cases yielded positives. Nonetheless the with-holding of treatment until after repeated negative dark-field examinations needs to be vigorously preached.

7. Glandular aspiration of the satellite bubo of the chancre with dark-field examination of the serum yielded fifty per cent. positives.

8. Of eighty patients who previously had seen physicians we found that only three had had dark-field examinations, one army man, one navy man, and one civilian.

9. The practitioner's margin of error in diagnosis was thirty per cent. In twenty-four per cent. treatment of some kind had been instituted while no diagnosis had been given the patient.

10. "Chancroid" is still the chief diagnostic pitfall. The attitude that every genital lesion is potentially a chancre until proved otherwise is the safest for public and patient. Diagnosis of chancroid should not be made until four months after the appearance of the lesion and following repeated negative Wassermann tests. "Cancer," "tumor," herpes," "felon" are the masquerades of extragenital chancres.

11. One patient had been used as a transfusion donor before coming to the clinic, while he had a chancre, and was at the height of his spirochetemia, and ten days before his secondary eruption appeared. The physician who used him as a donor had evidently made no inquiry into his condition.

12. The Wassermann test in our secondary cases yielded the following: 92 per cent. positive in treated and untreated; 95.7 per cent. positive in those with slight treatmen ; 98.5 per cent. positive in those without treatment.

13. We believe the repeated positive Wassermann test in secondary syphilis is a safer guide for the inexperienced than the characteristics of the eruption. If it is negative, the dark-field or the combination of findings may make the diagnosis.

14. In the aggregate twenty-four per cent. of patients with florid secondary syphilis, a high percentage could give no history of chancre, even though their secondaries were fully developed. This included a physician with secondaries, but no sign of a primary lesion (needle prick!).

15. Women are especially apt to give no sign of a primary lesion (concealed, short duration, and so forth).

16. Macular eruptions preponderate in our secondary cases. This we believe is an effect of special attention to lighting on our part, and is of great importance where inspection is used as a clue to syphilis as in industrial and military hygiene.

17. More than half of our patients had infectious lesions when seen (sixty-eight per cent). More women than men had infectious lesions (seventy-five per cent. in contrast to sixty-four per cent.), which makes them even more effective carriers than men. In this we are in accord with Fournier.

18. Half our patients had constitutional symptoms with secondary irruptions; much fewer in the preruptive stage (four in twenty-eight).

19. Women show a markedly greater tendency to constitutional symptoms than men (sixty-three per cent. in contrast to forty-three per cent). In this also we are in accord with Fournier.

20. The leading constitutional symptoms are sore throat (fifty-three per cent.), headache and head pain (thirty-one per cent).

21. Combinations of mild fever, sweats, loss

of weight, asthenia, gastro-intestinal symptoms, nervous irritability, arthritic and myalgic pains with anemia are frequent and are easily confused with early tuberculosis. They justify a routine Wassermann test when tuberculosis is suspected, especially in early adult and middle life.

22. Myalgia, arthralgia, and bone pain are easily confused with "rheumatism." The traditional nocturnal character is not a safe guide to syphilis, and is often absent. (John H. Stokes and Albert R. McFarland, American Journal of Syphilis, July, 1922).

On the Treatment of Syphilis with Bismuth Salts.

Sazerac and Levaditi of the Pasteur Institute, Paris, have recently proposed the use of tartro-bismuthate of potassium and sodium, containing approximately fifty per cent. of bismuth, for the treatment of syphilis. In their preliminary work on rabbits they found that the only safe and efficient method of administration was by the subcutaneous or intramuscular route. Intravenous injections were shown to be dangerous on account of the markedly toxic action of the drug. In order to decrease this danger as far as possible they substituted a suspension in oil of the drug for the watery solution. This was found to be the method of choice in the treatment of human cases on account of increased tolerance and less local reaction.

Fournier and Guenot have tested the value of this treatment of syphilis on a comparatively large scale and report the results of the treatment in about 200 cases.

The authors state that bismuth is undoubtedly a most energetic anti-syphilitic agent having particularly marked effect not only on the infections manifestations of the disease but also on the Wassermann reaction. They conclude, however, that time only will tell if this drug will prove to be of value in the radical cure of syphilis. (Editorial, signed E. P., U. S Naval Medical Bulletin, September, 1922).

Treatment of the Syphilitic Liver and Heart.

Although an ardent advocate of the use of arsphenamin in the treatment of syphilis, the author is of the opinion that it should not be used as a routine measure in treatment of cardiac and hepatic syphilis. When indicated in these two conditions it may be used with reasonable safety in those cases which have responded to a previous administration of mercury and iodide. "In mercury and iodide we have two drugs remarkably suited for the treatment of visceral syphilis. Their action is slow and this, I believe, is desirable. The syphilized liver and heart, in whatever stage of the disease, from clinical experience at least, seem to do better when the process of repair is slow and when no great strain is placed upon their normal functioning activities." (Udo J. Wile, American Journal of the Medical Sciences, September, 1922).

The Truth About Medicine

During December, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

Powers-Weightman-Rosengarten:
Arsenobenzol-Billon.
Merck & Company:
Digitan Ampules (for Hypodermic Use)
Digitan Ampules (for Oral Use).

New and Nonofficial Remedies.

Ven Calcium Cacodylate Ampules, ¾ grains: 1 Cc. contains calcium cacodylate-Ipco (See New and Nonofficial Remedies 1922, p. 55), 0.05 Gm. (¾ grain).

Ven Calcium Cacodylate Ampules, 1½ grains: 1 Cc. contains calcium cacodylate-Ipco, 0.097 Gm. (1½ grains).

Ven Calcium Cacodylate Ampules, 3 grains: 1 Cc. contains calcium cacodylate-Ipco, 0.195 Gm. (3 grains).

Ven Calcium Cacodylate Ampules, 5 grains: 1 Cc. contains calcium cacodylate-Ipco, 0.324 Gm. (5 grains).

Ven Calcium Cacodylate Ampules, 7 grains: 1 Cc. contains calcium cacodylate-Ipco, 0.453 Gm. (7 grains). Prepared by the Intra Products Co., Denver, Col.

Mercurialized Serum-Lederle for Intravenous Injection.—Each package contains the equivalent of 1/3 grain (0.022 Gm.) of mercuric chloride in 8 Cc. normal horse serum. The initial dose is 1/12 grain of mercuric chloride. This may be gradually increased to 1/3 grain. For a discussion of the actions, uses and dosage of mercurialized serum, see New and Nonofficial Remedies, 1922. p. 189. Lederle Antitoxin Laboratories. New York.

Silvol.—A brand of protargin mild-N. N. P. (See New and Nonofficial Remedies 1922, p. 326). Silver is a compound of colloidal silver with an alkaline proteid and contains about 20 per cent. of silver. Parke, Davis and Co., Detroit. (Jour. A. M. A., Dec. 9, 1922, p. 2001).

Arsenobenzol-Billon.—A brand of arsphenamine-N. N. R. For actions, uses and dosage, see New and Nonofficial Remedies, 1922, p. 43. Arsenobenzol-Billon is marketed in ampules containing, respectively, 0.1. 0.2, 0.3. 0.4, 0.5, and 0.6 Gm. of arsenobenzol Billon (Jour. A. M. A., Dec. 16, 1922, p. 2085).

Propaganda for Reform.

More Misbranded Nostrums.—The following prod-

ucts have been the subject of prosecution by the federal authorities charged with the enforcement of the Food and Drug Act: Simmons' Cough Syrup (A. B. Richards Medicine Co.) consisting essentially of ammonium chlorid, glycerin, chloroform, vegetable extract, alcohol, sugar and water, flavored with anise; Hobbs' Nerve Pills (Hobbs Spanish-American Medicine Company) consisting essentially of powdered iron, quinine. licorice, starch and traces of arsenic and strychnin; Mando Tablets (Garcey's Drug Store) containing extracts of nux vomica and damiana; Castlebarry's Sexual Pills (Allan-Pfeiffer Chemical Co.) consisting of an iron compound, extracts of Spanish fly and nux vomica, chalk and sugar; Fackler's Compound Extra of Damiana consisting of extract of plant drugs, including nux vomica, damiana and saw palmetto and also extract of Spanish fly, sugar, alcohol and water. (Jour. A. M. A. Dec. 2, 1922, p. 1949).

Neutral Acriflavine in Septicemia.—Neutral acriflavine has been used intravenously in septicemia and similar conditions, but the available evidence does not demonstrate the value of the drug in these conditions. Also, the available evidence is insufficient to judge whether the intravenous use of the drug has dangers other than those inherent in intravenous medication. (Jour. A. M. A. Dec. 3, 1922, p. 2033).

The Propaganda for Reform in Esthonia.—Physicians the world over have long recognized that the claims for proprietary medicines put forward by those who are financially interested in sale are always over-optimistic, often unwarranted and not infrequently deliberately misleading and fraudulent. It is natural, therefore, that the widespread significance of the work of the Council on Pharmacy and Chemistry of the American Medical Association should have attracted the attention of the medical profession of all civilized countries and suggested the inaugurating of similar reform. An institute for drug control has been established in the Netherlands. Efforts toward the establishment of bodies patterned after the Council on Pharmacy and Chemistry have been reported in the past from Germany, Italy and Belgium. Now comes a message from Esthonia, formerly a Baltic province of Russia, but now an independent state, that the achievements of our Council are an incentive toward the inauguration of similar work in that country. (Jour. A. M. A. Dec. 3. 1922, p. 2020).

Ferraline (Ferraline Medicine Co.), consisting essentially of iron sulphate with other iron compounds and water. Crab Orchard Mineral Water (L. H. Goodwin and Co.). a highly mineralized water, the dissolved mineral matter consisting chiefly of Glauber's and Epsom salts (Jour. A. M. A., Dec. 16. 1922, p. 2103).

Hayes Asthma Remedy.—This preparation is exploited by P. Harold Hayes, Buffalo, N. Y. Some years ago, six of the seven remedies were examined. The analysts reported one, a cough medicine, to contain oils of turpentine, peppermint, etc., emulsified and sweetened. A second contained potassium iodid. A third preparation was reported to contain potassium, sodium and ammonium iodid. A fourth preparation contained iron peptonate. A fifth preparation consisted of capsules containing quinine sulphate. A sixth preparation consisted of pills which contained as their active constituent resin of Jalap (Jour. A. M. A., Dec. 30, 1922, p. 2248).

Two Electronic Diagnoses of Abrams.—Instead of the blood of a patient, a physician sent the blood of a guinea pig to one J. W. Eisiminger of Oklahoma City who operates a physico-chemical laboratory for the electronic reaction of Abrams. Eisiminger is an osteopath. The report received by the physician on the patient, whose history was sent in, reads as follows:

"Congenital diminished resistance, cerebro-spinal and digestive strain, 39 ohms, Metastatic Carcinoma, 6 Liver and right colon, Tuberculosis Genito-urinary tract, 6 ohms. Colisepsis, 4 ohms., streptococci, infection, 12/25 ohms. in gall bladder region."

Another physician states that he sent Eisiminger some sheep's blood on blotting paper with a blank supposedly for a fifteen year old boy. This physician received the following diagnosis:

"Congenital diminished resistance cerebro-spinal strain 38 ohms. Metastatic carcinoma of left lung and pancreas, 8 ohms. Neisserian infection genito-urinary tract, eyes, 4 ohms. Tuberculosis of genito-urinary tract, 4 ohms."

However, it is possible that these blood specimens were not taken in subdued light and that Eisiminger was not informed if the subjects had red hair nor of their religious faith, factors which are said to play an important part in diagnoses made by the Abrams method (Jour. A. M. A., Dec. 30, 1922, p. 2247).

Book Announcements

An Introduction to the Practice of Preventive Medicine. By J. G. FITZGERALD, M. D., F. R. S. C., Professor of Hygiene and Preventive Medicine and Director Connaught Antitoxin Laboratories, University of Toronto. Assisted by PETER GILLESPIE, M. Sc., C. E., M. E. I. C., Professor of Applied Mechanics, Univ. of Toronto, and H. M. LANCASTER, B. A., Sc., Director of Division of Laboratories, Provincial Board of Health, Ontaria, etc. Also chapters with appendix articles by various contributors. St Louis. C. V. Mosby Company. 1922. 8vo. 826 pages. Cloth. Price, $7.50.

Dispensary Service in the United States. Second Annual Presentation of Hospital Statistics by the Council on Medical Education and Hospitals of the American Medical Association. Dealing with Hospital Outpatient Departments and Other General and Special Dispensaries. 1922. With lists of General Dispensaries, Tuberculosis Dispensaries, Dspensaries for Venereal Diseases, Dispensaries for Nervous and Mental Diseases and Federal Dispensaries. Reprinted with editions from Hospital Number of the Journal of The American Medical Association, October 21, 1921, and August 5, 1922. Paper. 31 page. Price, $1.00

Medical Diagnosis. For the Student and Practitioner. By CHARLES LYMAN GREENE, M. D., St. Paul. Formerly Professor of Medicine and Chief of the Medical Department, University of Minnesota, and Chief of Medical Clinic, University of Minnesota Hospitals. Fifth edition revised and enlarged. 1453 and XX pages, with 14 colored plates and 623 other illustrations. Philadelphia. P. Blakiston's Son & Company. 1012 Walnut Street. Cloth. Price $12.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.

OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.

ALEX. G. BROWN, Jr., M. D.,
Editor.

G. H. WINFREY,
Business Manager and Secretary-Treasurer.

AGNES V. EDWARDS,
Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 FEBRUARY, 1923 No. 11

Editorial

Hospitalization and Diabetes.

When one undertakes to manage a case of diabetes. the first prerequisite for the accurate control and treatment of such a case is the hospitalization of the patient. This is a prime necessity. Patients with mild diabetes, for a limited time or in a limited sense, may be, perhaps, rendered sugar-free by following oral instructions as to diet. Such patients may be given a diet prescription and may be told to follow it in the home. In some instances, by this method, a fair degree of success may be obtained. In many cases, however, little will be accomplished, except, possibly, a transient freedom from the appearance of urine-sugar to the sugar test. The home method is faulty. The opportunity for the careful instruction of the patient is lost; the accurate management of the patient is lost; the maintenance of weighed and charted diets properly increased and balanced is lost; the complete study of patients for etiology and concurrent maladies is not so well obtained. By hospitalization of the diabetics, even in mild cases, these valuable phases of management are at once covered and the patients are placed, at the end of a three or four-week-period of study, in a position for greater physical, as well as intellectual, control over the malady. Of course, the value of and demand for hospitalization of these cases is far greater in the severe or grave types of the disease.

The writer recalls a case that well illustrates the need of hospital study and management. The patient was a young married woman. She had been feeling badly. Her husband urged her to go to see her physician. On the way to "the movies," one afternoon, she 'dropped in" to see her doctor. She gave the doctor her history; he suspected diabetes; urine examination disclosed positive sugar. She was informed that she had diabetes and that she must begin treatment. She undertook, contrary to advice, the self-management of her case at home. In three days she was in a diabetic coma and, within a week after the office visit, she was dead. Such instances are rare but evils of a lesser degree are frequently experienced through the lack of hospital control and instruction in diabetes. No doubt, in this day of careful sterilization and surgical technique many operations by the surgeon might be successfuly performed and good results obtained in the home of the patient. But such an idea is no longer entertained by the surgeon or the patient. Equally important is the hospital in the management of medical cases of this sort, if good results are expected. The physician must feel the demand and register this upon the minds of diabetics. Practitioners who discover sugar in the urine during the course of an examination have a responsibility in this matter. The patient may be totally adverse to the hospital idea. Many people, it is commonly observed, entertain the queer idea that hospitals are institutions to be used by them only in the face of some "terrible surgical operation" or some emergency condition that may arise. This is an opinion which should be combated by instruction and teaching. Hospitals are equipped for more accurate and successful fight against disease, and in no instance of constitutional and metabolic diseases is the use of a hospital more important than that of diabetes mellitus. Here is found the dictitian with her equipment for measuring and weighing the diet. Here is found the laboratory equipment for examination of the urine, the blood, the gastric and duodenal contents, the alveolar air, the metabolic rate, and the roentgenological examinations that may be needed. Here the patient is under control and daily observation.

Here the patient is protected for a time from the pitfalls of a weak resolution. Here the patient is instructed in the dietary management, as well as led into the philosophical attitude of resignation to a life based upon limitations of diet.

The Internist—The Dentist and Focal Infection.

After ten years of work in the field of oral sepsis, in its relation to systemic diseases, after a decade of direct and earnest effort to evaluate the real significance of the etiologic relationship of oral infection to general diseases of the body, it can now be stated that the relationship of cause and effect has been established beyond reasonable question, and that, in consequence, the dentist and the internist have found common ground of understanding in their inter-related fields of work. And this mutual understanding has been greatly enhanced by conference groups in clinics and by discussions in joint meetings or symposiums. This start must be increased. Specialists of all sorts must intermingle. The whole future of medicine, both for the profession and the public, depends upon the co-operation of specialists.

In order to increase this co-operation, in the matter of focal infections and systemic diseases, the dentist should have a "look in" upon the gross evidences of disease in the body when such is due to infection of teeth. He should be shown the results obtained after the removal of infected teeth. This is quite necessary, as a procedure, if conviction is to be produced generally in the mind of dentists.

Pain has been all too long accepted as the measure of infection or, at least, as a criterion for vigorous treatment and removal. No longer must pain be relied upon to serve as a sole guide in this matter. Because, it happens very often, that there is no pain in places of most serious systemic infection. The dentist and the internist cannot depend upon the subjective symptom of pain. The symptom-group that may be set up by focal oral infections of the jaw should be known to both. The call of the symptoms that emanate in and about diseases of the joints (acute arthritis, acute rheumatic fever, hypertrophic osteo-arthritis), of the diseases of the respiratory tract, including the nose, paranasal sinuses, larynx, trachea, bronchi, lungs and pleurae; of diseases of the circulatory organs (myocarditis, endocarditis, muscular irregularities of the myocardium, and hypo- and hyper-tension of the blood pressure); of diseases of the blood (anemias); of diseases of the digestive tract (gastritis, ulcer of the stomach, gall tract infection, and appendicitis); of the diseases of the kidneys (nephritis and pyelitis); of the diseases of the nervous system (meningitis and neuritis;) of the diseases of the glands of internal secretions (goitre, diabetes, etc.); the call of such symptoms, to repeat, should be understood alike by the dentist and the internist in the relationship of cause and effect. The disturbance of function of systemic organs is often due to some cause very remote from the site of maximum intensity of symptoms. The internist may, by chance, be the first to observe the systemic side and seek the aid of the dentist to find and remove the cause; often the opposite condition exists, the dentist may be first consulted and he should direct the patient to the internist for a general study and alleviation of secondary pathology.

Shortness of breath should be taken by the dentist and all specialists as an extremely important symptom. Patients complaining of, or displaying evidence of, shortness of breath, should excite in the mind of dentists and specialists the keenest interest. Patients who declare, without inquiry or solicitation, that they suffer from breathlessness are, indeed, subjects worthy of the keenest scrutiny of the most careful sort. Dentists may well heed the warning of the internist to search carefully for focal infection in patients presenting this symptom; they may likewise conclude that patients presenting symptoms of this kind have an advanced pathology. One's thought naturally turns to the respiratory system for the allocation of the origin of shortness of breath, but it is frequently true that the location is in the defective heart or cardiovascular-renal system.

In adults, shortness of breath, when it results from diseases of the heart and in association with long standing oral infection, betokens, in most cases, with a negative history of rheumatism and a negative Wassermann, a grave heart or cardiovascular-renal condition.

But the condition is not hopeless. The discovery of a cause, which may be removed, may be the means of obtaining an improvement in the course of time. The writer has frequently seen, marked or unexpected improvement in cardiac function in cases where the focal infection was the cause of the trouble after its removal.

Good Roads! Good Roads!! Good Roads!!!

In Kentucky, one-third of the representatives in the Legislature are physicians, it is reported. As a consequence, the doctors of Kentucky have an influence for good that is potential. Why should not doctors serve in the state law-making body? Is there any class of men or profession more intimately in touch with the people? Is there any group of citizens that knows more of the needs or wants of the State? No, the doctors, by the very nature of their calling and daily duties, are in best position to know what is needed.

The physicians of Virginia may well consider an organized effort looking to the bringing forward as candidates for the next Legislature, physicians who are fitted to serve in this law-making body. Physicians from each representative section should concentrate upon one of their number and urge him to come out as a candidate. The doctors of Virginia have been all too backward in public matters. Lawyers, and even preachers, of late years, have apparently taken more active part in politics and political questions than have doctors. The doctors' work and service is intimately connected with and dependent upon good roads. On this great public need, Virginia is far behind her neighbor-states. The highway problem is inter-linked with health problems, with education problems, with business problems, with welfare problems, and with religious problems. The doctors of Virginia should organize and enter actively in the practical side of politics, with a view of bringing forward doctor-candidates for the next Legislature (1924). Let Virginia follow the example of the daughter-state, Kentucky.

The extra session of the legislature is about to meet for the purpose of considering the Good Roads Problem of Virginia. The doctors of Virginia may be an influence in helping the representatives to arrive at a proper solution of the question of funds. The three thousand miles of highways in Virginia cannot be built without money. You may have the best expert advice and the most skillful organization for highway building, but little can be accomplished without an adequate amount of money. There is no sense in dodging the issue. The money must be secured. If Virginia is to progress and win the greatness in material, cultural and spiritual progress which she justly deserves, her sons must pay the cost in dollars and cents. The cost of the three thousand miles of highways yet to be built is variously estimated, says an authority, from $50,000,000 to $120,000,000. But by others it is considered that $75,000,000 will be sufficient, calculating the cost at $25,000 per mile at an outside figure.

The present State income for road building amounts to $3,577,000. It is easy to see that at best it would take over twenty years to complete the present road system with this limited annual outlay. Now, if a one cent gasoline tax, yielding $833,000 is added, it would take seventeen years; if a three cent gasoline tax were added, it would take twelve years. But, can Virginia afford to wait? In five to six years, in the hands of men accustomed to big jobs, the highway system of Virginia can be built, it is estimated, at an annual expenditure of $15,000,000.

Now, these appear to be the main facts. The question is how to get the money and then to build the roads right and maintain them, and let this and succeeding generations pay for them.

A day or so ago, a farmer brought his crop of tobacco to market in Richmond. On the way, his car was mired in a mud hole. He broke an axle and wore out a tire, trying to get out of the hole. His tobacco brought him about $200 and it cost him about $50 in automobile repairs. This is the sort of tax that keeps us poor and takes the spirit out of men.

The following plan seems a fair way to get the money: "Increase the tax for roads sufficiently to bring in half of the needed fifteen millions annually and provide for a sinking fund and interest on the bond issue of thirty-five million to complete the present road system in five years." A tax of approximately two mills on property would suffice to ac-

complish the desired result, it is estimated. The present income for roads is:

Mill tax	$1,775,000
Federal aid	971,000
Direct appropriation	204,000
Overhead appropriation	285,000
Convict and road force	342,000
Total	$3,577,000

News Notes

Training for Public Health Officers and Sanitary Inspectors at the University of Virginia.

Readers of this Journal will be interested in the announcement made in the advertisement of the Medical Department of the University of Virginia, that in addition to the regular fourth year medical course, the University has undertaken to provide training for health officers and sanitary inspectors.

The recent combination of all public health work in Albemarle County, the City of Charlottesville, and at the University of Virginia under one full-time health officer provides the University of Virginia with unique facilities for practical training in public health and sanitation. The Albemarle County Health Unit has been in successful operation under Dr. W. S. Keister for three years and has established its reputation as one of the best—and perhaps the best rural health unit in the State. This unit has now been combined with the health departments of Charlottesville and the Univeristy, so that the University has in successful operation at its very doors the means of giving practical training in the kind of health work which the South especially needs.

Although the general principles of public health and sanitation are the same in cities and in rural districts, each of these two locations presents its own problems, and special training for each kind of work is highly desirable. A health officer whose experience is limited to a large city may find it difficult to adapt himself to rural work, and the work of a sanitary inspector on the east side of New York City would differ considerably from that in a Virginia town or county.

The South is chiefly a rural section. Its public health problems are those of the country rather than those of the city.

We congratulate the University of Virginia on seizing the opportunity for service to the State which is presented to it. We also congratulate the County of Albemarle and the City of Charlottesville in adopting the far-sighted policy of uniting with the University so as to combine their public health work with the work of instruction by the University of Virginia. Precisely the same thing is true here as has been abundantly proven true in teaching hospitals. Not only are the medical students benefited by their hospital study, but the hospital is more than repaid by the service which these highly trained medical students render as "clinical clerks." The same thing must be true in the teaching of public health and sanitation. Albemarle and Charlottesville will have a better health department because it is a teaching health department, and the University will have a better health school because it has at its doors a field clinic in which to bring its students into first hand contact with rural health problems, and also to train them for their future profession.

For the present, two courses of practical training are offered by the University of Virginia:

First, a 12 weeks' course for graduates in medicine who desire practical training for the duties of a health officer in small towns and in rural districts.

Second, as 10 weeks' course of training for those with a high school education and preparing for positions as sanitary inspectors with county boards of health.

Roanoke Doctors Active for Next Meeting.

Roanoke doctors have had several meetings to arrange for the next meeting of the State Society and have appointed committees to look after the various details. The General Committee is composed of Drs. John O. Boyd, chairman, Alfred P. Jones, secretary, T. Allen Kirk, H. B. Stone and W. B. Porter.

The following sub-committees have been appointed, the first named being chairman of his committee:

Finance—Drs. Claud Moore, Paul Davis and E. H. Luck.

Hotels—Drs. Elbyrne Gill, E. H. Luck and Ira Hurt.

Meeting and Committee Rooms—Drs. J. D. Willis, S. B. Cary, R. L. Mason, E. L. Sutherland.

Entertainment—Drs. J. T. McKinney, M. R. Faville, G. M. Maxwell.

Exhibits—Drs. W. L. Powell, T. D. Armistead and W. W. S. Butler, Jr.

Publicity—Drs. J. W. Preston, J. F. Armentrout and E. P. Tompkins.

Reception—Drs. H. H. Trout, I. E. Huff, S. S. Gale, Geo. Lawson, W. R. Whitman, R. H. Garthright, J. R. Garrett, and W. B. Foster.

Badges—Drs. George Hooker, Geo. A. Kolmer and J. C. Darden.

Automobiles—Drs. George Hurt, R. H. Dubose, H. H. Trout and W. L. Powell.

Golf Tournament and Use of Golf Greens—Drs. M. R. Faville, S. S. Gale, Geo. Lawson and Alvah Stone.

Scientific Exhibits—Drs. W. B. Foster, Littleton Davis, E. E. Watson, J. B. Nichols and D. E. Remsburg.

Ladies—Mrs. J. W. Preston, chairman.

The Virginia Tuberculosis Association,

At a meeting of its Executive Committee on February 3rd, adopted the following program of work for the ensuing year:

1. Establishment of permanent tuberculosis clinics in co-operation with the State Board of Health.

2. Publicity and general educational work in the interest of municipal and regional sanatoria.

3. Children's work; Scales for the public schools, and Nutritional work (Emerson's).

4. Educational work leading to the establishment of public health nurses.

5. Co-operation with institutions for the care of destitute children in the state in the work for the prevention of tuberculosis.

6. Survey of industries of the state to determine to what extent medical and nursing service is being used and to stimulate such where absent.

California Meeting of A. M. A.

California invites you to attend the American Medical Association Convention in San Francisco, June 25 to June 29, 1923. You are also invited with your families and friends to attend the California State Medical Association meeting in the same city, the Friday and Saturday before the American Medical Association holds its convention. Some five or six other National and District Medical Associations will meet in San Francisco between June 21 and June 30. Our readers are not only urged to attend, but to spend their vacations in California. Through contacts with various financial, civic, tourist and automobile agencies, upon request, the committee will assist you in planning your trip, in making you comfortable while at the Convention, in arranging side trips of any length or character, and in any other way acting as your host while in that state.

Arrangements are being made for a number of automobile caravans from eastern points to San Francisco. From early information, it seems that this is going to be a popular method of crossing the continent. If you and your friends desire to go by automobile, the committee will assist you from the moment you leave home until you get back. If you plan to go any other way, write for information, in making your arrangements. You are requested to write to Dr. W. E. Musgrave, 806-9 Balboa Building, San Francisco, for any information of whatever character about this Convention, or about vacation opportunities anywhere in California.

Japanese Medical Commission to Visit United States.

It is announced through the Rockefeller Foundation that a Commission of six Japanese doctors, appointed by the Japanese Minister of Education, will arrive in the United States early in March, as guests of the Rockefeller Foundation, for the purpose of studying American and Canadian medical institutions and methods. The Commission, as a whole or as individual members, will visit the leading hospital and research centers in the United States and Canada, including New York, Philadelphia, Baltimore, Boston, St. Louis, Cleveland, Chicago, Rochester, Minn., Montreal and Toronto.

The Japanese have made notable contributions to the progress of scientific medicine and this visit will give to American medical men an opportunity for exchanges of ideas with a group of scientists whose medical researches have given an international reputation to the hospitals and institutes with which they are associated.

The Kanawha (W. Va.) Medical Society,

At its annual meeting recently, held at Charleston, W. Va., elected the following officers for the ensuing year: President, Dr. Geo. H. Barksdale, Charleston; vice-president, Dr. Raymond H. Dunn, South Charleston; secretary-treasurer, Dr. Wm. P. Black, Charleston. Drs. Benj. S. Preston, Peter A. Haley and C.

A. Lay were named on the board of censors. The following were appointed delegates to the meeting of the West Virginia State Medical Association, to be held in Beckley in May: Drs. Martin V. Godbey, John E. Cannaday, Walter W. Point, R. H. Walker, G. C. Robertson, and Wm. A. Thornhill.

The Kanawha Society, with a membership of 141, is the largest local society in West Virginia.

Dr. H. M. Miles,

Of Norton, Va., is doing post-graduate work in diseases of the eye, ear, nose and throat, at the New York Eye and Ear Infirmary and at Roosevelt Hospital.

The Southern Public Health Laboratory Association

Will hold its annual meeting in Richmond, March 23rd and 24th. This Association is composed primarily of the laboratory directors of the Southern States, but is, also, always attended by many others interested in public health laboratory work. Mr. A. H. Straus, of the Virginia State Board of Health Laboratory is secretary, and he will be pleased to send a program and further information to anyone interested.

The meeting last year was held in Jackson, Mississippi, and the year before in Atlanta, Georgia. The programs at these sessions were about equally divided between scientific and administrative problems. This same general policy will be followed this year.

Dr. Tom A. Williams,

Of Washington, D. C., by invitation, delivered an address, January 15, to the alumnae, faculty and students of Randolph Macon College, Lynchburg, Va., his subject being "The Management of the Emotions in Youth."

Dr. James B. Stone,

Formerly of Pittsylvania County, Va., who graduated in medicine from the University of Virginia in 1919, has located in this city, at 2024 Park Avenue, and will limit his practice to the diseases of infants and children. Dr. Stone served as interne at Bellevue Hospital, New York, from July, 1919, to January, 1922, when he was appointed resident physician for the Children's Medical Division. After a year's service in this capacity, he located in Richmond in January.

The American Congress on Internal Medicine

Will hold its seventh annual Clinical session in the amphitheathres, wards and laboratories of the various institutions concerned with medical teaching, at Philadelphia, Pa., beginning April 2nd, 1923.

Practitioners and laboratory workers interested in the progress of scientific, clinical and research medicine are invited to take advantage of the opportunities afforded by this session. Dr. Sydney R. Miller, Baltimore, is president.

Address inquiries to the Secretary-General, Dr. Frank Smithies, 1002 N. Dearborn Street, Chicago, Ill.

Dr. W. H. Dulaney,

Lynchburg, Va., has been re-elected surgeon to the Garland-Rhodes Camp, Confederate Veterans, of that city, for the ensuing year.

Married.

Dr. Robert Hall Harrington, of Major, Va., and Miss Ruth Ione Hammond, of this city, December 23, 1922. Dr. Harrington graduated from the Medical College of Virginia last June and is at present an interne at the Memorial Hospital, Richmond.

Dr. Henry Tayloe Compton and Miss Sarah Millburn Walthour, both of Savannah, Ga., January 24. Dr. Compton is a member of the class of '17, University of Virginia, Department of Medicine.

Some Doctors Noted Among Bank Directors.

In the annual meetings of officers and directors of banks, the following doctors are among those noted as directors in some of the Virginia banks: Dr. William P. McGuire, Winchester; Dr. W. R. Cushing, Dublin; Dr. William F. Drewry, Petersburg; Dr. D. L. Elder, Hopewell, and Dr. Joseph A. Rucker, Bedford.

Dr. Henry Clay Carson,

Recently of Dunbar, Va., has moved to Osaka, Va., where he succeeds Dr. H. H. Webb.

Dr. J. G. Bentley,

Has just returned from New Orleans, La., after taking several weeks post-graduate work at Tulane University. Accompanied by his family, he made the trip west and back by automobile.

New York Academy of Medicine to Have New Home.

The New York Academy of Medicine has purchased the southwest corner of Sixtieth Street and Park Avenue, facing 100 feet on each street, for the erection of a new home. It is stated that they will have generous backing in this project. It is planned to commence

work on the new building in the autumn and it will have ten or twelve stories. Every facility possible will be furnished the doctor for post-graduate work. The library, already the second largest medical library in this country, that of the Surgeon General in Washington being first, is to be much enlarged. Last year, the library of the New York Academy of Medicine had 34,000 readers and the number is rapidly increasing.

Dr. E. H. Heaton,

Of Paeonian Springs, Va., is taking a course at George Washington Hospital, Washington, D. C., in clinical diagnosis and laboratory technique. Upon completion of this course, he will take charge of this special work at the Loudoun Hospital, Leesburg, Va.

Dr. and Mrs. John F. Armentrout

And daughter, of Roanoke, Va., have returned home after a visit to Richmond.

Dr. E. L. Kendig,

Victoria, Va., was in Richmond recently on business.

Dr. Lawrence T. Price,

Of this city, has been elected president of the Richmond Chapter of the Virginia Polytechnic Institute Alumni, for the present year.

Dr. Stuart McGuire,

Richmond, was among the visitors who addressed the North and South Carolina Division of the American College of Surgeons, at its meeting in Columbia, S. C., early this month.

The Crawford W. Long Memorial Association

Has been organized in Atlanta, Ga., to raise funds with which to erect a statue of Dr. Long, the founder of surgical anesthesia, in the National Hall of Fame, Washington, D. C. Dr. Frank K. Boland is president of the Association, and Dr. Wm. J. Blalock, president of the Fulton National Bank, of Atlanta, is treasurer. Only $3,000 of the necessary $10,000 had been secured to the middle of January.

Tri-State Medical Association of the Carolinas and Virginia.

The annual meeting of this Association is near at hand, the dates being February 21 and 22; the place, High Point, N. C.; the president and secretary, Drs. S. S. Gale, Roanoke, Va., and James K. Hall, Richmond, respectively. This, like all "Tri-State meetings," is going to be interesting and pleasant and a large attendance is anticipated. The session on the first evening is to be open to the public. There are to be three symposia, the subjects being "Cancer," "Pneumonia" and "Mental Diseases." Invited guests include Drs. Henry A. Cotton, Trenton, N. J.; Jas. B. Murphy, Thos. W. Salmon, Wm. W. Herrick and Russell Cecil, New York City, and Carl Hedblom, Rochester, Minn. There are forty papers on the program.

Dr. James McLean Rogers,

After a leave of absence spent at his home in Amelia, Va., has returned to Soon Chun, Korea, Asia, where he is working as a medical missionary. Dr. Rogers has many friends in this section, having graduated from the Medical College of Virginia in 1917.

Dr. Thomas D. Jones,

Of Richmond, has been in New York since November 1st, taking service at the Post-Graduate, Babies' and Willard Parker Hospitals. He will remain in New York until June 1st, when he will take an appointment on the Floating Hospital, Boston, for the summer months. Dr. Jones now plans to return to Richmond about September 1st and take offices in the new Medical Arts Building at Second and Franklin Streets. He will limit his practice to pediatrics.

Dr. John A. Pollard,

Formerly of Huddleston, Va., has moved to 101 College Street, Lynchburg, Va.

Dr. J. J. Anderson,

Irwin, Va., accompanied by a friend, is enjoying a motor trip of several weeks, visiting the various cities and resorts in Florida.

State Health Legislation.

Last year the U. S. Public Health Service and the National Health Council listed some 350 health bills, which were introduced in the 1922 legislatures of ten states. This year the legislatures of forty-two states will be in session and it is apparent that many bills relating to health measures will be introduced.

While we are striving to amend our Medical Practice Act in Virginia, so as to rid the public of the work of charlatans and quacks, we regret to note that a bill has been introduced in the House of Representatives in Nebraska which "Would permit duly licensed physicians of any school or system of healing, including religious, to treat patients in institutions receiving support from city, county, or state."

Reorganization of Federal Health Activities.

We note from the *Journal of the A. M. A.*,

that a conference was held in Washington, D. C., January 17, in the office of the Brigadier General C. E. Sawyer, chief co-ordinator of the Federal Board of Hospitalization, to consider plans for the co-ordination of the health activities of the Federal Government. According to the plan submitted by Gen. Sawyer, the proposed department will be known as the Department of Education, Health and Welfare, with a secretary who is to be a cabinet officer, at its head, and an assistant secretary. It is proposed that the various agencies of the Federal government (except those within the army and navy), relating to health, education, social service and the rehabilitation of veterans, be transferred to the new executive department, each to carry with it its present powers, appropriations and personnel, intact. An executive committee, composed of Dr. Gilbert Fitzpatrick, of the American Institute of Homeopathy, Chicago; Dr. R. M. Olin, state health commissioner, Lansing, Mich., and Dr. William C. Woodward, of the Bureau of Legal Medicine and Legislation, of the A. M. A., was appointed to carry forward the work of the Conference.

Income Tax.

If you have not attended to your income tax return, it should begin to receive your attention. Failure to receive a form does not relieve the taxpayer of his obligation to file a return and pay the tax on or before March 15, 1923. Returns are required of every single person whose net income for 1922 was $1,000 or more and of every married person or head of a family whose net income was $2,000 or more. Exemptions are explained on forms 1040A for net income of $5,000 and less, and on 1040 for income in excess of $5,000.

As in the past, a doctor may claim as deductions the cost of supplies used in the practice of his profession, expenses paid in the operation and repair of an automobile used in making professional calls, dues to professional societies, subscriptions to professional journals, office rent, and the cost of fuel, light, heat and water used in his office, and the hire of assistants.

In case of illness or absence of the taxpayer from home, an extension of time should be secured from the collector of internal revenue of the district in which the taxpayer lives.

The Medical Society of the District of Columbia,

At its annual meeting in January, elected the following officers for this year: President, Dr. L. H. Reichelderfer; vice-presidents, Drs. J. Russell Verbrycke and Edith L. Coale; secretary, Dr. Coursen B. Conklin; corresponding secretary, Dr. Prentiss Willson, and treasurer, Dr. Edward G. Seibert.

Dr. H. H. Webb

Has left Osaka, Va., and is doing X-Ray work in Erie, Pa.

Dr. Ennion G. Williams,

State Health Commissioner, who has been confined to his home in Richmond as a result of "flu," is regaining his strength gradually and hopes soon to be at his work again.

Dinner to Senator Copeland.

Dr. Royal S. Copeland, Commissioner of Health of New York City, was tendered a dinner at Hotel Astor, February 12, on the eve of the assumption of his new duties as a United States Senator in Washington.

Dr. John H. Baird,

Formerly of Richmond, is on the staff of the U. S. Veterans' Hospital, No. 81, New York, N. Y.

Dr. and Mrs. Hunter B. Spencer

Have returned to their home in Lynchburg, Va., after a visit to Atlantic City, N. J.

Memory of Medical Student Honored.

Memorial services were held in Charlottesville, Va., January 31, for the late Jose Anselmo Lazo, of Nicaragua, who spent his first two years in this country studying medicine at the University of Mississippi. He entered the third year medical class at the University of Virginia in September, 1918, and, a little later, in response to call, volunteered to act as a nurse during the influenza epidemic. He later contracted the disease and died.

The occasion of the services was the unveiling of a modest granite headstone, erected by the Whitehead Literary Medical Society, which bears the inscription "Jose Anselmo Lazo, January 27, 1892—October 26, 1918. A medical student who gave his life for others in the epidemic of influenza."

The Abrams Cult,

Perhaps the latest of the fads to be hoisted on an imaginative sick public, is receiving some amusing criticisms in the Western medical journals. They being nearer the base of

operations, San Francisco, are perhaps getting the first influx of these new supposed to be "miracle" workers. The amazing thing is that even an unsuspecting public could be duped into believing some of the absurdities claimed by Abrams and his followers. We understand that there are at least two of the Abrams machines being used in this State.

The Richmond Tuberculosis Association

Held its annual meeting in this city February 1, at which time many matters of interest were discussed. It was announced that the amount received from the sale of Christmas seals was less than that for the preceding year, but it was hoped the deficit would be made up when full returns were received. Dr. Garnett Nelson was re-elected president, and Miss Nora Spencer Hamner, executive secretary.

Narcotic Regulations Modified.

The *Journal of the A. M. A.* announces that "Regulations governing the prescribing of narcotics in the treatment of incurable diseases and for aged and infirm addicts whose physical collapse from the withdrawal of the drug might be fatal have been modified by the Commissioner of Internal Revenue, with a view to preserving as far as possible professional secrecy with respect to such cases." A full explanation of these modifications should be secured by those prescribing narcotics.

Dr. Llewellys F. Barker,

Of Johns Hopkins University Medical School, will be the chief speaker at the annual meeting of the Sphex Club of Lynchburg, Va., to be held soon.

Dr. P. W. Boyd,

Winchester, Va., was one of the party of 200 surgeons from medical colleges and clinics of this country, all fellows of the American College of Surgeons, who sailed from New York, February 10, for South America. This visit is intended to bring the surgical faculties and professors of the two countries into closer relations. The party will return April 14. Many of the surgeons were accompanied by their wives and other members of their families. Dr. Boyd was accompanied by his daughter.

The Atlantic Medical Journal,

Which will represent the combined State Medical Associations of Pennsylvania and Delaware, and will be a successor to the *Pennsylvania Medical Journal*, will appear in April. This is the outcome of a suggestion made by Dr. Alexander R. Craig, late secretary of the American Medical Association, that a consolidation of the medical journals of Pennsylvania, Maryland and Delaware would centralize medical thought and purpose. The Delaware Society readily accepted the suggestion and fell in with Pennsylvania in the above arrangement.

Bequest to Hospital.

The Rockingham Memorial Hospital is the beneficiary of $10,000 in the will of Miss Clara Chaunceauline, who died in that city recently.

Dr. John M. Love,

Recently at the U. S. Veterans' Hospital, Oteen, N. C., has been transferred to U. S. Veterans' Hospital No. 84, Algiers, La.

Dr. N. T. Ennett,

Richmond, Va., announces that he is limiting his work to pediatrics. He has offices in Professional Building.

Dr. William P. Gilmer,

Recently of Clifton Forge, Va., sailed the latter part of January for Korea, where he went as a medical missionary under the auspices of the Southern Presbyterian Church. Dr. Gilmer graduated from the Medical College of Virginia in the class of 1916 and has many friends in this section who will be interested in his welfare.

Dr. S. C. Draper

Has returned to Southwest Virginia, having accepted a position with the Virginia Iron, Coal and Coke Company at Inman, Va., the first of January.

Dr. Beverley R. Tucker,

Of Richmond, by invitation, addressed the Prince Edward County Medical Society at Farmville, Va., on the evening of January 12, his subject being "Endocrinology." Preceding the address, a bird supper was given by Dr. R. L. Hudgins, in honor of Dr. Tucker, to the members of the Society.

Dr. Hare has Narrow Escape from Death.

Dr. J. Hampton Hare, Newland, Va., narrowly escaped death, the latter part of January, when his car overturned and he was caught under it. While on his way to see a patient, his car skidded in soft sand and completely overturned. When the mail driver, who witnessed the accident, reached Dr. Hare, his face was almost purple from the weight of the car on his neck, and he was unconscious for an hour after being rescued from his peril-

ous position. He suffered from severe shock and a sprained back.

Health Lectures for Women.

Dr. Mary B. Baughman, of Richmond, who graduated from the Medical College of Virginia last June, is giving a series of health lectures in this city, under the auspices of several women's organizations, to further the work of the Woman's Foundation for Health. Similar lectures are being given throughout the United States. They are open to all women and girls, without charge, and with or without membership in any of the co-operating organizations. Dr. Baughman, having been a student in sculpture, physical education and gymnastics, as well as medicine, is well fitted to give these talks.

Clinics and Collected Papers of St. Elizabeth's Hospital.

The above is the name of a volume now in press with the C. V. Mosby Company, of St Louis. It is to be the first volume of an annual issue of "Clinics and Collected Papers of St. Elizabeth's Hospital, Richmond, and includes many clinics not before published, as well as collected papers from members of the staff. So far as we are aware, this is the first time such a publication has made its appearance in the South and we wish for it a hearty welcome.

"Endocrine and other Organotherapeutic Preparations"

Is the title of a booklet just issued by Armour and Company, of Chicago. It contains articles upon the products that the title covers. A copy will be mailed to any physician or pharmacist upon request.

U. S. Civil Service Examinations.

The United States Civil Service Commission, Washington, D. C., announces open competitive examinations for the following:

X-Ray mechanician, to fill a vacancy in the Veterans' Bureau, Washington, and other vacancies requiring similar qualifications, applications to be received until February 20, 1923:

Assistant bacteriologist (food products), for vacancies in the Bureau of Plant Industry, Department of Agriculture, Washington, and similar positions, applications to be received until March 6, 1923;

Graduate nurse and graduate nurse (follow-up), for vacancies in the U. S. Veterans' Bureau and in the Indian Public Health Services, applications to be rated as received until July 3, 1923;

All citizens of the United States, men and women, who meet the other requirements, may enter the examinations.

Medical Officers Wanted.

The U. S. Civil Service Commission also announces open competitive examinations for Junior Medical Officer and Assistant Medical Officer (Roentgenology; Psychiatry), and for Medical Officer (Tuberculosis; Neuropsychiatry; Internal Medicine and Diagnosis, Physiotherapy), to fill positions in the Indian Service, the Coast and Geodetic Survey, the Public Health Service, and the Veterans' Bureau. Competitors will not be required to report for examination at any place, but will be rated on education and training, and experience. Applications will be rated as received until close of business on July 3.

Full information and application blanks may be obtained from the above named Commission at Washington, D. C., or the secretary of the board of U. S. Civil Service Examiners at the post-office or customhouse in any city.

Dr. Richard Eanes,

Who enlisted in the medical service of the army at the beginning of the World War, but who has been stationed for the past three years in Tientsin, China, will land in San Francisco the middle of February, from which point he will report for duty at Fitzsimons Hospital, Denver, Colorado. Shortly thereafter he is expected in Richmond to visit his parents, Mr. and Mrs. O. B. Eanes, at 103 East Cary Street.

Dr. Eanes, who was a former Richmond boy, graduated from the Medical College of Virginia in 1911, after which he located in Widen, W. Va., and practiced until he entered the army.

The American Child Health Association,

With headquarters at 532 Seventeenth Street, Washington, D. C., has been formed for the protection and promotion of child health in America. This association was formed by the amalgamation of the American Child Hygiene Association and the Child Health Organization and will have the full co-operation of the American Relief Administration, under the leadership of Herbert Hoover. The directors include many noted public health authorities and workers in child welfare problems.

To succeed, the new association needs the as-

sistance of every professional worker—every doctor, nurse, teacher, public health official and social service official, and wants the co-operation of the parents, and of the children themselves. The need of concerted action is apparent, when it is recalled that "America now ranks last of all nations advanced enough to have statistics on maternal mortality. It ranks sixth in infant mortality. Of its twenty-two million school children, thirty per cent. are so far under standard weight as to suggest a condition of malnutrition, and three million are in urgent need of medical attention."

The Association of American Medical Colleges

Will hold its annual meeting at Ann Arbor, Mich., March 2 and 3, under the presidency of Dr. Charles P. Emerson, Indianapolis. Dr. Frederick C. Zapffe, Chicago, is secretary. The chief topic of discussion at this meeting will be the new medical curriculum. Dr. Theodore Hough, dean of the Medical Department of the University of Virginia, will present a paper on "Shall the Premedical Requirement be Increased?"

Dr. John B. Deaver,

Philadelphia, conducted a surgical clinic last month, at the Presbyterian Hospital, Charlotte, N. C.

Member of Pharmacy Board.

Mr. W. L. Lyle, of Bedford County, has been reappointed a member of the Virginia State Board of Pharmacy, his new term of office beginning March 1, this year.

Dr. and Mrs. C. C. Tennant,

Of Charlottesville, Va., were recent visitors in this city.

Dr. and Mrs. Robert C. Byran

Have returned to their home in this city after spending some time in the Adirondack Mountains.

Dr. B. C. Keister,

Formerly of this State, has located at 2621 Fourteenth Street, Northwest, Washington, D. C.

Dr. A. Micklem

Advises us that his address is now Schuyler instead of Rockfish, Va.

Dr. Samuel L. Steer,

Recently of Paeonian Springs, Va., is now at 1507 M Street, Northwest, Washington, D. C.

Dr. T. Dewey Davis,

After a service at Tucker Sanatorium, Richmond, has moved to Professional Building, this city, where he is associated with Dr. Douglas VanderHoof.

Louisiana Almanac.

The 1923 Almanac, published by the Louisiana State Board of Health, has been received at this office, and we find it as attractive as former numbers. Many home-y truths are presented in a way which should catch the layman's attention and the jokes interspersed keep one in a happy frame of mind.

The Annual Congress on Medical Education, Medical Licensure, Public Health and Hospitals

Is to be held at Congress Hotel, Chicago, March 5, 6 and 7. Dr. Arthur Dean Bevan is chairman of the Council on Medical Education and Hospitals of the A. M. A.; Dr. Victor C. Vaughan, chairman of the Council on Health and Public Instruction of the A. M. A.; Dr. C. P. Emerson, president of the Association of American Medical Colleges; Dr. Davis A. Strickler, president of the Federation of State Medical Boards of the U. S.; Dr. Frank Billings, president of the American Conference on Hospital Service. An interesting program has been arranged.

Wanted.

Position as doctor's office assistant, by an undergraduate nurse with a knowledge of stenography and routine laboratory work. Splendid recommendations. Willing to start on moderate salary. Address "C. J. M.," care this journal.—(Adv.)

Obituary

Dr. James Merit Melton,

Of Crozet, Va., a prominent physician of Albemarle County, was instantly killed on the evening of January 10th, when his car overturned on the Charlottesville-Staunton turnpike, in making a curve. Dr. Melton was returning from visiting a patient and was evidently thrown through the top of his automobile when the accident occurred. His skull was fractured and his neck broken.

Dr. Melton was born in Nashville, Tenn., October 13, 1871, and studied medicine at Vanderbilt University, from which he graduated

in 1901. After spending four years in Nashville, he took up health work first in South America and later was employed by the Isthmian Canal Commission. He located in Virginia in 1910 and had been at Crozet since 1912. He was an enthusiastic member of the Albemarle County Medical Society and also a member of the Medical Society of Virginia. He is survived by his wife and one sister.

Dr. Frank Green Simmons

Died at his home in Richmond, January 27, after being a sufferer with tuberculosis some ten years. He was a native of Kentucky, and was 53 years of age. Dr. Simmons graduated in medicine from Vanderbilt University, Nashville, Tenn., in 1890, and then returned to his home town and practised until 1907, at which time he located in Richmond. He was for some time connected with the faculty of the Medical College of Virginia and was a member of the Medical Society of Virginia. Dr. Simmons was for six years associate physician at Mt. Regis Sanatorium, Salem, Va., having returned to Richmond several months ago. His wife and a daughter survive him.

A beautiful tribute was paid Dr. Simmons in the editorial columns of the *News Leader*, of January 29, in which was brought out the great service he rendered others, while himself fighting for life at a tuberculosis sanatorium.

Dr. Orion Baum,

For forty years a practising physician in Princess Anne County, Virginia, died at his home at Vine, Va., January 9, after an illness of only a few days. Dr. Baum was born in Princess Anne County, 67 years ago and received his early education at the Virginia Agricultural and Mechanical College. After this he studied medicine at the College of Physicians and Surgeons, Baltimore, from which he graduated in 1884. He had been a member of the Medical Society of Virginia since 1889.

Dr. James Philip Roy

Died at his home in Richmond, January 25, death being due to Bright's disease. He was a son of the late Colonel James P. Roy, U. S. A., and was born when his father was stationed at Ft. Leavenworth, Kan., 61 years ago, but had made his home in this city since he was 12 years of age. He studied medicine at the University of Virginia, from which he graduated in 1884. For some time, Dr. Roy demonstrated anatomy at the Medical College of Virginia and was for several years professor of orthopedic surgery in the same school. He had been a member of the Medical Society of Virginia since 1904.

Dr. Roy is survived by his wife and two sisters.

Dr. Spotswood Hayes Parker.

Died in Charlottesville, Va., January 8, after a long illness. He was a native of Portsmouth, Va., having been born there in 1881. He studied medicine at the University of Virginia, from which he graduated in 1904. For a number of years he made his home in Hartford, Conn., where he was one of the medical directors of the Travelers' Insurance Company. Dr. Parker married Miss Florence C. Jones, of Charlottesville, who, with four children, survives him.

Resolutions on the Death of Dr. E. Guy Hopkins.

At a meeting of the Richmond Academy of Medicine and Surgery, held on January 23, 1923, the following resolutions were adopted:

Be it Resolved, That in the death of Dr. Erasmus Guy Hopkins, the profession of this State, the City of Richmond, and the Richmond Academy of Medicine and Surgery have sustained a great loss that will long be felt.

His professional life, in its conscientious devotion to duty, might well be taken as an ideal for the young men of his profession. The term genius, which is often lightly placed, attains its full meaning when applied to Dr. Hopkins.

In this body, where he was known so well, no eulogy of him is needed. Suffice it to say that with him died a brilliant physician, a modest kindly gentlemen, a splendid soldier.

Be it Further Resolved, That these resolutions be spread upon the minutes of this Society, that they be published in the Virginia Medical Monthly, and that a copy of them be sent to his family.

Signed,
W. Lowndes Peple,
A. L. Gray,
Garnett Nelson.

Dr. William H. H. Tate,

Died at his home at Heflin, Va., the first of this month. He was 83 years of age and a native of Ohio. Dr. Tate graduated from the Louisville Medical College in 1875. He was a veteran of the War Between the States and lost an arm while fighting with the Southern forces in the battle at Seven Pines, near Richmond. His wife died several years ago.

Virginia Medical Monthly

Official Organ of the Medical Society of Virginia

Vol. 49, No. 12.
WHOLE No. 849

RICHMOND, VA., MARCH, 1923.

20 CENTS A COPY
$2.00 A YEAR

Original Communications

IMPORTANCE OF EARLY DIAGNOSIS OF ACUTE ABDOMNIAL PAIN.*

By JOSEPH D. ROGERS, M. D., Washington, D. C.

I wish to note a few thoughts which may cause us to attach more importance to the subject of early diagnosis of acute abdominal pain.

The physician, or surgeon, when called in to see a patient with acute pain, is often confronted with a most serious condition which does not admit of watchful waiting. A proper valuation must be promptly placed upon the symptoms presenting. The high mortality still found in acute abdominal conditions is due, both to some of us being too conservative and hesitating to use radical measures when warranted, vainly hoping that the alarming symptoms may take a favorable turn; or hurriedly performing operations before case has been thoroughly studied. A prompt decision must be reached. In some cases a delay is as harmful as a hasty operation, and all of us recognize the perniciousness of hasty operations. A diagnosis should be made as accurate as circumstances will permit and at least to the extent, first, of determining whether or not an operation is indicated; next, when operation should be performed; and last, whether we can safely give the patient opiates to relieve pain while observing case.

Many times it will be found difficult to differentiate acute abdominal pain when all methods of diagnosis are exhausted, but I believe that many more cases would be diagnosed properly if careful attention and methods available were used. We cannot hope to have all the facilities for studying cases at all times, but we can always obtain a careful history, which should be taken by the attending physician; make a careful survey of symptoms which should usually include chest, abdominal, rectal and vaginal examinations, with study of blood and urine, and such special tests as are indicated and available. In the ancient days, great dependence was necessarily placed on those things apparent to the naked eye; that is, the appearance of the patient and the obvious variations from the normal produced by the various phenomena of disease. This is equally as valuable now as then. Keen observation of cases will do much to improve our diagnosis, and many men, no matter how isolated, have developed this power of observation to a wonderful degree.

Diagnosis is, or should be the sum total of the history, the findings in the patient, and the results of various specialized methods of examination, and I wish to emphasize that it is not the examinations, or tests, that count but their interpretation and assigning to them their proper value and significance.

The recent impetus to group study of cases is a most notable advance in diagnosis and should be of incalculable benefit to both patient and physician. It is giving specialized medicine to the smaller communities as well as the larger centers. The combination of talent should bear the same relation to medicine as capital to industry and should be used, not for increased profit, but for increased efficiency. Also, we must be careful not to develop the habit known as "passing the buck" and no individual assuming the responsibility. There are disadvantages in the group system, and one patient expressed one phase of it very aptly when, after he had been quite thoroughly examined by a group of young men and told an operation was indicated, was asked what he intended to do about having the operation performed: he replied by saying he "reckoned he would go and ask his old family physician about it, as he—the family physician—knew his constitution best." Group medicine should be of vast economic value by conserving time

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

and accrued accomplishments and should materially lessen commercialism. However, we must guard against making unnecessary examinations at the patient's expense, in time, pain, danger or cash expenditure. Also, we must be careful in group medicine to have men capable of making and interpreting special tests undertaken. Some groups are composed of four or five general practitioners who meet for an hour or two at their building and masquerade as specialists a few hours daily, attempting examinations and interpretations which they are not duly qualified to make. Proper group work will tend to increase the number of men with special knowledge and make better specialists, for the man worthy of that title will have to prove his ability. There is a sort of feeling that no physician has reached the full stature of medical life who is not in some way a specialist, and yet someone has said that a specialist is a localized hypertrophy. The best specialty of all is the specialty of general diagnosis. I cannot conceive of anything more noble or gratifying in medicine than to be recognized as a careful and keen observer, intelligent and wise diagnostician with good judgment, and a safe counsellor.

Perforation of gastric ulcers, typhoid perforations, acute hemorrhagic pancreatitis, ovarian cysts with twisted pedicles, strangulated hernias, acute obstruction of bowels require immediate diagnosis and prompt operation. Operations for adhesions should be considered most carefully, for we must remember the possibilities of breaking up one adhesion and having two new ones form, which often do more harm than original ones. Any patient who has previously had an abdominal operation and subsequently has abdominal pain, with difficulty in getting bowels to move or expel flatus, should be suspected of having an adhesive band obstructing bowel. I have seen some cases in which it acted as a string tied around a bag. In children, special care should be taken to eliminate pneumonia and diaphragmatic pleurisy, which often gives abdominal pain and rigidity. In neurotic cases, abdominal pain is often of a cyclic character and the relief afforded by operation is not a cure, but an interval in the cycle. A careful investigation by a competent neurologist would often save us the ignominy of an unnecessary operation which often entails a train of symptoms which are worse than those for which it was undertaken.

In this age, when machinery is so extensively used and especially automobiles, we must recognize the importance of acute abdominal conditions caused by trauma, such as ruptured spleen, liver, kidneys and intestines. We must be careful not to minimize the seriousness of the presenting symptoms, regardless of the fact that the injury has, apparently, been trivial. In cases of suspected hemorrhage into abdominal cavity, the use of an aspirating syringe is both safe and often enlightening. A short time ago I saw a boy of eighteen years who upset his automobile by turning off the road at night in passing another automobile and remembered nothing of having been struck in fall. On admission to hospital, he had a pulse of 80, normal temperature, and no evidence of shock or sign of trauma on external examination. He complained of intense abdominal pain and was rigid over right side of abdomen. Leucocyte count was 16,000. Catheterization of bladder disclosed bloody urine, and a subsequent operation revealed a ruptured kidney. His companion, sitting beside him the entire time, was unhurt.

Unfortunately, many abdominal cases are not seen by any physician until late in the disease. I think we should give the laity rational information regarding the seriousness of acute abdominal pain, but we must be extremely careful not to unduly alarm.

This past summer I saw a boy who had a Meckel's diverticulum coming off from ileum about one foot from the caceum, which had looped across and cut off circulation in about one and one-half foot of colon and ileum, causing gangrene. He had been allowed to remain for thirty-six hours without medical aid. Patient was brought into hospital moribund six hours after physician first saw the case. The case at its onset could have been most easily relieved by severing the small adhesion of the diverticulum. Just here I would like to say we seldom see an adult who complains of chronic dyspepsia and who is continually dosing himself to obtain relief after eating, who is not in reality a surgical patient and his trouble is usually in appendix, gall bladder, stomach or duodenum and may take on an acute phase at any time. Often the life and future happiness of a patient are in the hands of the physician who first sees the patient and

the importance of early diagnosis of acute abdominal pain is paramount. Many patients with acute abdominal disease unfortunately do not fall into the hands of a competent physician or surgeon until immediate operation under the unfavorable condition of peritonitis gives the only chance of life. Then, again, for another class of cases postponed operation and preparatory treatment by accepted methods converts a desperate risk into a favorable one. To differentiate these cases and to decide when to operate, taxes a surgeon's judgment to the utmost and experience is the best teacher. When in doubt, wait. We frequently find old adhesions about the appendix, walled-off collections of pus or blood which have gravitated to the pelvis, and omentum repairing perforations of stomach or bowels and other conditions which indicate the wisdom of deferring certain operations; they show us that we cannot say a patient will surely die unless operated.

Abdominal operations should have definite indications and, when performed, enough should be done to give a reasonable assurance of a cure. Surgical tinkering with the ovaries, tubes and intestines is often a failure and is followed by conditions requiring subsequent operations which could have been avoided, had more careful pre-operative study been given the patient. The character of abdominal operation done should be determined by the individual requirement as well as the pathology present. To illustrate, a young woman with multiple myoma should have a myomectomy, while one near the menopause should have a hysterectomy.

It is important to differentiate pelvic infection, for we have advanced to the point where the treatment of acute puerperal infections is chiefly expectant and surgery resorted to only to clean up the debris. Especially is this true of acute puerperal infections and the greatest danger to life in acute puerperal infection is the over-anxious, meddlesome surgeon.

In non-operative treatment of acute pelvic infection, we have added much of value to the important subject of acquired immunity. These principles of treatment are now being applied to acute chest infection. I believe that within a few years the pleural cavity will be invaded with as much impunity as the abdominal cavity now is. More attention should be paid to the urinary tract, for many cases of pyelitis and focal infection of genito-urinary tract resemble closely abdominal lesions and often have harmful abdominal operations been performed. Renal stones often give misleading symptoms. It has been estimated that nearly fifty per cent. of patients with stones in ureters have had a previous abdominal operation which did not benefit and many times added to the burden of the kidneys. Accurate study of urine, microscopically, by showing the presence of blood and pus cells, will often help us to discover that the pathology is in the urinary tract. The cystoscope is a valuable aid and should be used more frequently in diagnosis.

Any surgeon who has had a large experience in abdominal surgery can recall errors he has made in operating on patients with typhoid fever, pneumonia, pregnancy, pyelitis, locomotor ataxia, or other diseases mistaken for abdominal lesions. These mistakes, while regrettable, are pardonable if we have used all the means at our command to make a proper diagnosis. These mistakes show us that even under the most favorable circumstances, we often err. That there may be better co-operation between physician and surgeon I would suggest that the physician who sees the case at the onset explain to the patient and friends the difficulty of determining the significance of acute abdominal pain at the beginning and that there are certain stages in some acute abdominal conditions which cannot be safely operated until infection has become less virulent and localized. They should not tell the patients that they are being sent to a hospital for immediate operation, but rather that they are being sent to hospital that more facts may be found out and the findings better correlated so that the question of operation may be determined. It is very embarrassing to the surgeon to have to decline to operate in cases of acute pelvic inflammatory disease when patients have been rushed to hospital for immediate operation.

If all cases of acute perforation were operated in the first twelve hours the mortality would be less than one per cent. One operator reports fifty-two cases of perforating gastric and duodenal ulcers on which he did an early gastroenterotomy at the primary operation with only one death. One writer states that thirty per cent. of the cases of diffuse peritonitis seen after the first day die. The mortality from acute appendicitis, if statistics from all hospitals, large and small together, with

those treated at home are considered, will be found to be ten per cent. Some surgeons who get their cases of appendicitis exceptionally early, report series of two or three hundred cases with less than one per cent. mortality. Few cases of acute appendicitis operated on within twelve hours of onset would prove fatal.

Purgatives will be mentioned in order to condemn. The old adage, "keep the bowels open and trust to Providence," has no place in the treatment of acute abdominal conditions. Purgation is responsible for many deaths in acute infections of abdomen. Personally, I have never seen a ruptured appendix where the patient had not been previously purged. This observation is confirmed by many others of larger experience than mine. Do not purge unless you can exclude certain acute abdominal conditions.

Finally, I would like to emphasize the great danger of opiates in acute abdominal pain, except in suitable cases, as well as the benefits opiates may be when properly used in certain cases in which we have decided to try to tide over the acute symptoms of the disease and postpone surgical intervention until a more favorable time. The patient is most interested in the relief of pain and is entitled to a skilful diagnosis, for there are many times when we can safely give opiates in cases of pelvic inflammation, gall bladder disease, stones in kidney or ureter, etc., whereas, a physician not skilful in diagnosis forces his patient to suffer much unnecessary pain.

In conclusion, I would say that by more thorough examination, more accurate observation, more careful analysis and selection of cases, profiting by our mistakes and endeavoring to make earlier diagnosis in all our acute abdominal conditions, we may be able to save one more abdominal case out of a hundred and that, to the fortunate individual, means one hundred per cent. improvement.

1400 *M Street, Northwest.*

Discussion.

Dr. Stuart McGuire, Richmond: The position taken by Dr. Rogers in his paper is so commendable that all I can do is to emphasize some of the points he has made.

The necessity for early diagnosis and prompt operation in acute abdominal conditions is shown in the mortality that still exists in a disease as common and as well-known as appendicitis. There are certain surgeons working under favorable conditions who are able to report long series of consecutive cases with a mortality of one per cent. or two per cent., but this by no means represents the work of the rank and file of the profession.

Not so long ago I read the statement of a reliable authority who said he had recently tabulated the mortality rate of appendicitis as given in all available reports of hospitals in the United States. The figures showed the death rate was over ten per cent. As hospitals that publish reports are as a rule superior to those which do not do so, and as these statistics include chronic as well as acute cases, the present mortality of acute appendicitis in this country is something appalling. It is a recognized fact that if cases of appendicitis are operated on earlier, practically all of them will recover; hence the high mortality is a reproach to the profession.

When an acute case comes to me, I have a physical examination made of the heart and lungs and a laboratory examination of the urine and blood. I do not delay operations for a thorough and complete study of the case. If you call into consultation the urologist, neurologist, roentgenologist, gastroenterologist and other specialists, the patient will die or get in a hopeless condition before a final conclusion is reached. I must confess that in following this practice I have sometimes made a mistake, but an early operation does no harm and frequently saves life. There are, of course, some cases brought to a surgeon when it is "too late for an early operation and too early for a late operation," and in these cases it is often wise to practice "watchful waiting" and try to get the patient in better condition before opening the abdomen.

Dr. W. L. Peple, Richmond: I enjoyed Dr. Rogers' paper very much. There are several points, however, about the importance of early diagnosis in acute abdominal pain, that he did not emphasize.

In the first place, the acuteness of the pain, after all, depends largely on the mentality and temperament of the sufferer. The longer you live, the more clearly you realize this fact. What is a horrible pain to one patient is really nothing at all to another. So you really have to know something of the person you are trying to help.

Then comes the relation of abdominal pain to other conditions. That is where the surgeon comes in: to link up the abdominal pain by putting it in the proper relation with the other symptoms. Abdominal pain alone may have very little significance. Abdominal pain, when stomach and colon are empty, is of very great significance. Pain with rigidity may be entirely different. It may point to a case of appendicitis. I know of no more alarming a symptom. Where the pain continues, without ceasing, we know something serious is going on. Frequently, when the pain stops suddenly, and there is only tenderness, we know that we have something very serious to deal with. It is usually a gangrenous appendix.

SOME PEDIATRIC PRACTICALITIES.*

By SAM WILSON, M. D., Lynchburg, Va.

By request, I have listed herein some practical observations I have made in the practice of pediatrics, during the past decade.

Firstly, and I might add foremostly, I have been impressed with the fact that a large number of children are wrongly consigned to the tubercular doom. I see these cases come into

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

my office so diagnosed, and I see them yield to anti-syphilitic treatment. Our observation leads us to believe that pulmonary syphilis is a very common thing in late infancy and childhood.

Dr. Cabot of Boston says, in his work on physical diagnosis, that every case with a chronic cough, diagnosed as tuberculosis, in which no tubercle bacilli could be demonstrated, should be given the benefit of specific therapy.

We know that specific invasion of the mucous membrane of the respiratory tract is a commonplace thing in hereditary syphilis, yielding the symptom complex, chronic cough, anaemia, wasting, and so forth, on which the diagnosis of tuberculosis is often predicated. To make the exigency more confusing, the stethoscopic findings, in the two divergent conditions are substantially analogous.

After years of careful study and scrutiny we are unable today to differentiate stethoscopically the two morbid states.

Yester-year the English wrote a great deal about what they denominated the syphilo-tubercular. Unquestionably the two conditions are not infrequently coincidental. The possible associative relationship between these two diseases is intensely absorbing.

The English have been making some superlative claims for the iodides in the treatment of tuberculosis. It is certainly not inconceivable that the good result reported from the iodine treatment was referable, not to the action of iodine or the tubercular process, but rather to its specificity on the syphilitic virus and its attendant pathology.

When nature is encumbered by a species of infection like syphilis, and has super-added an infection like tuberculosis, manifestly, nature's immunity producing mechanism can work to better advantage when she is dis-encumbered of one or the other. It is very probable that in this way is produced the favorable results observed by the English; syphilis being a devitalizer of nature's anti-bacterial mechanism prevents a return to normalcy in these cases, rather than a superlative degree of tubercular infection.

We should not diagnose a case of tubercular meningitis too soon. We have seen cases so diagnosed prove to be nothing but cyclic vomiting. The simple procedure of tapping the spinal cord will save us much embarrassment. In every case of severe acute abdominal pain in an infant we should think at once of an over distended bladder and intussusception. We should never, if called over the phone at night, prescribe paregoric for a child suffering from an acute abdominal pain. Two cases, in the past year, coming under our observation, were so treated by the family physician. They were cases of intussusception. Its a sad commentary, but it is a fact, that this is too often a mispractice, the sequel of which is a tragic catastrophe. If we are guilty hereof, Nemesis should hover over our couch as the most horrible nightmare that ever came to plague a human thought.

We should never think of rheumatism as extant in an infant. Such will almost invariably prove to be either syphilitic epiphysitis or scurvy.

We are prepared to admit that the process of teething does cause trouble and does cause pain. We have observed that the best way to tranquillize an irritable, fretful, teething child is to instil a few drops of a ten per cent. solution of carbolic acid in the ear. Pain in the ear is a very common concomitant of teething. A vermilion hue of the drum membrane is very often seen in those cases in which the tooth is exerting great pressure and about to erupt through the mucous membrane. At times these children are very restless and fretful without any apparent discoverable cause save pressure on the gums. This is the type of case that is benefited by instillations in the ear. The explanation of this phenomenon is found probably, in the fact that the inferior dental nerve sends a tributary to the tympanum. When the tooth is exerting great pressure, the irritability of the inferior dental nerve is carried along to its tributary supplying the drum membrane. This irritation produces the resultant redness and lancinating pain. Of course, we can accept or spurn, as the mood may please, this explanation as enunciated by Dr. Rotch, but the practicality remains that not even the magic wand of Prospero could effect a more remarkable change than that which is often seen in these cases by carrying out the suggestion of Dr. Rotch, namely, the instillation into the ear of a ten per cent. solution of phenol.

Many difficult feeding cases are predicated

upon a syphilitic basis. It is not uncommon in these cases to get a history of jaundice that persists from three to eight weeks after birth. Dr. Holt says that every case of jaundice that persists after three or four weeks is strong presumptive evidence of syphilis. Putting these cases, with such a history, on inunctions of mercury seems to increase the child's digestive capacity and facilitates the problem of feeding.

Called to a case of convulsions, we should remember the possibility of a foreign body in the ear. We once saw a case clear up instantly on the removal from the auditory canal of a small navy bean.

We should remember that rapid respiration does not necessarily indicate disease of the lungs. It is very often a herald of an impending acidosis. If we do not take cognizance of this prognostic a fatal issue may ensue. Given a case then with hyperpnoea, with no physical signs in the chest, we should think at once of acute acidosis and start the alkalies and the pulmonary congestion will often be fugacious.

We should remember never to give either camphor, antipyrine, belladonna or the salines to a nursing mother unless we want to dry up the milk.

If we are in doubt as to the exact nature of an acute respiratory disease, the best thing to give is camphor. From 1 to 3 drops of the Spirits of Camphor every 3 hours apparently benefits these cases to no diminutive degree.

If mother's milk is scanty, the best galactagogue we have found in the realm of pharmaceuticals is Nutrolactis. Nutrolactis either singly or conjointly with Neoferrum often has a very happy effect.

In all very nervous children we should be certain to think of intestinal parasites. We should examine the stools carefully for the ova; we have seen children as young as nine months vomit the ascaris.

We should not be too confident that we can diagnose diphtheritic laryngitis from pneumonia following an attack of catarrhal laryngitis. The distinguishing earmarks of these two diseases are made very clear in text-books, but in actual practice the characteristics are often not sufficinently marked to be of diagnostic value. The safest thing to do is to give antitoxin.

Text book annotators would spurn the idea that asthma could be confused with diphtheria, yet in 1920 we saw two cases, one with a fatal termination, diagnosed as asthma, which in reality, were cases of diphtheria.

We have been struck with the fact that the type of breathing in laryngeal diphtheria, so far as the chest signs are concerned, smacks decidedly of the asthmatic. If we listen to the chest of a child, particularly one past three or four years of life, and note an asthmatic type of breathing, we take great pains to make a careful scrutiny of the nose, mouth and pharynx. If we don't do this in the vernacular of the street, some of these cases will get by us, provoking a tragedy.

One of the cases I have alluded to had been seen by two physicians, each in turn pronouncing the morbidity asthma.

In an infant, of course with its small larynx and progressive laryngeal stridor, this misdiagnosis is not likely to be made, but in the run-about age, requiring several days, as it does, to produce stenosis to give us the text book picture of laryngeal diphtheria, this misapprehension does occur.

We would sound a note of warning to those who palpate the post-nasal space without proper precautionary disinfection of the hands. Thorough surgical antisepsis of the operator's hands should be practicalized before attempting post-nasal palpation. If we don't do this, we may set up a severe post-nasal infection. Dr. Talbot, of Boston, once told me that he considered postnasal palpation in infants a major operation in point of precautionary asepsis.

Given a case running an inexplicable temperature for several days, particularly if the mother states that the child has a head cold or snuffles, we should think at once of acute adenoiditis.

We have seen the temperature in such cases, defying elucidation, defervesce promptly on instilling in the nose a ten per cent. solution of argyrol.

Given the following, an infant, a girl, with fever and digestive disturbances. If the mother on interrogation, replies in the affirimative that the diapers are stained yellow, and that it seems to hurt the child to bend her back, as evidenced by crying, when the diaper is adjusted and the back flexed, then, it is well to give urotropin instead of digestants, for.

on the doctrine of chances, the infant is suffering from a pyelitis rather than an intestinal intoxication.

Our experience coerces the conclusion that pyelitis is more frequently overlooked than any other disease of infancy and childhood.

Instead of the old dictum, "When in doubt give mercury," we would promulgate a new pronouncement, applicable in infancy, "when in doubt give urotropin."

A fetid breath does not by any means indicate always a disordered stomach. We should think of a post-nasal infection. We should inspect carefully the mouth, nose and throat, for the cause of the fetor will usually be found thereabout.

The topography of the eastern section of Virginia is proverbial for the prevelance of malaria. The residenters here, in point of the medical profession, are more capacitated to speak authoritatively on this subject than those living in a higher clime, where malaria is the exception, but we have made an observation in this particular that we want to italicize.

All text books that we have consulted tell us that there is an absence of the septic factor in malaria, the differential blood count not showing a polynuclear leucocytosis. They also asseverate that there is a tendency to leucopenia instead of leucocytosis.

Until recently these teachments caused us many an anxious moment. To our own satisfaction we have definitely determined that the text book pronunciamentos on this subject are not true. In the last six weeks we have had three cases of malaria, positively identified by our able local technician, Dr. Caldwell, that yielded a blood picture the absolute antithesis of the accepted view thereabout. Each one of these cases had a leucocyte count of over 18,000 and in every case the polynuclear count was ninety per cent. or over, showing a marked tendency toward the septic factor.

I mention this because, in view of the blood picture, we were looking assiduously for pus and were not a little non-plussed at being unable to make a diagnosis, particularly in the last case we saw, as the child had been sick over five weeks. As soon as we discovered the plasmodium in the blood and began quinine, the blood picture began to transmogrify. It was interesting to observe that after giving quiuine for twenty-four hours the blood count fell to normal and the relative blood picture assumed a normal status.

The last thing that we will call attention to in this paper is the effect of the iodides on chorea. We have scanned eagerly the bibliography on chorea, but nowhere do we find any reference to the value of the iodides therein. The iodides may have been advocated by others at times but the knowledge thereof has never come under our purview.

Every now and then we see a case of chorea that has been treated along orthodox lines come into our office with a history of therapeutic failure. We put these cases on the iodides and we see very soon thereafter a gradual cessation of the chroeiform movements. The progression toward recovery is continuous under this therapy.

For exemplification, about five months ago there came from a nearby township a case of chorea with a history of several months' duration, in spite of arsenic. This was the most pitiable case I ever saw. The incoordinate, involuntary, jerky movements were of such magnitude that the child could only with the greatest difficulty maintain her equilibrium. We started her on the iodides and pushed them to the point of tolerance. Simultaneously, with the administration of the iodides, the choreiform movements began to abate until in about four weeks they had surceased completely. She is still taking the iodides intermittently though there has been no return of the choreiform phenomena. Temperament was even after choreiform movements subsided.

A paucity of material prevents us from making any extended observations along these lines. We have been thinking of a possible associative relationship between syphilis and chorea, and wondering if that explains the beneficent action of the iodides. It is a matter of common knowledge that in antiquity they gave arsenic for syphilis. In modernity we know its transcendent value in the form of 606. The question then arises, might not the value of arsenic in chorea be due to a specific action of the arsenic on a strain of the syphilictic virus or its pathology? No doubt, in the on-coming years these conjectures will be made transparent. At the present time, from an empirical viewpoint we would advocate the iodides in obdurate chorea, hoping that it will prove of practical utility in the hands of those interested in the welfare of the human race.

DISCUSSION

DR. F. D. WILSON, Norfolk: I have listened to Dr. Wilson's paper with much interest. I can not let pass his remarks about chorea without just a word as to some experience I have had. In a long series of cases in the Children's Hospital in Boston, routine Wassermanns on blood and spinal fluid in chorea cases were obtained, with uniformly negative results, no more than the usual incidence being found in the chorea cases. I just want to bring out that point because of the experience had with chorea and the Wassermann reaction, and keeping that in mind it would seem rather doubtful that the iodides could have any specific action because of any possible relation to lues.

DR. W. P. MCDOWELL, Norfolk: I regret that I was unable to hear all of Dr. Wilson's paper.

I would like to ask him a question in regard to treatment of chorea by the aid of the iodides. Dr. Wilson spoke of some of his patients who cleared up in the course of four week under the iodide treatment. Were these patients confined to rest in bed during this period? During the past few years I have had good results with some of my chorea patients following rest in bed for four or five weeks. without the administration of any medication.

I would also like to know the results of the blood Wassermann in these cases.

THE USE OF DRY MILK IN INFANT FEEDING.*

By WILLIAM B. McILWAINE, M. D., Petersburg, Va.

There is, as we know so well, no royal road to success in Infant Feeding. No artificial food has ever yet been able to fit one hundred per cent. of the cases on which it has been used. No Utopian idea of feeding all infants thus and so and, behold, a perfectly growing and developing race of babies, has yet been evolved. Not even the scheme of the "Back-to-Nature Baby" of Central Park, New York, who lives without clothes and eats an unscientific and wondrous diet, would fit even a small proportion of perfectly normal infants, no matter how strongly constituted.

As Dr. Chas. Hunter Dunn said, when asked, What is the best baby food, "There is no best. Each case is a law unto itself," and today, I believe, all pediatricians think that he is right. So, in writing on the use of dry milk, let it be distinctly understood that it is not that I consider dry milk the best food for an infant to be artifically fed, but only because I consider it a very important weapon in the armamentarium of a man who must feed infants with some food which is different from that designed by Nature for infants.

There is little new that I can bring before you as to the qualities and characteristics of dry milk that you do not probably already know. In Europe it has been used for many years and its place has been fairly well established. In this country, probably the foremost man in bringing it to the attention of physicians was Dr. Roger H. Dennett, of New York City.

In a paper read before the Medical Society of the State of New York, May, 1918, and later printed in the *New York State Medical Journal*, July, 1918, Dr. Dennett reported a series of fifty cases, and, with many case reports, showed distinctly that dry milk could and should be used in a variety of cases of both infants who were not doing well or were doing badly on other artificial food. His theoretical reasons for the ready digestibility of dried milk are: First, the change which takes place in the casein during the process of drying. The heat and loss of water separates the casein almost instantaneously into minute particles which remain in this state after water is added for feeding purposes. These particles remain separated in the infant's stomach and so are more easily digested than the larger masses or curds of fresh cow's milk. Second, the dried milk used was the preparation called "Dryco," which has a low percentage of fat, and this, in Dr. Dennett's opinion, renders it more easily digestible, especially in those cases where indigestion is due to faulty fat metabolism. Another reason is the fact that dried milk contains a large proportion of free fatty acids which re-act with the alkaline carbonates to form soap, and this in turn forms an emulsion which assists in the digestion of fats.

Aside from the digestibility of dried milk, there are many features, as brought out by Dr. Dennett and others, which make it a most helpful adjunct to infant feeding. It is, if properly prepared, sterile. It will keep almost indefinitely. It is not easily contaminated even by the most ignorant. It can be carried from place to place and so, in traveling, is a great help, and finally, it is simple of preparation.

Dr. Dennett concludes, "it is only one more weapon with which to combat digestive disturbances, one more resource at hand to use with infants of feeble digestion and to tide over a critical period in selected cases."

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, 1922.

A French resume of dried milk in infant feeding by Ribadeau-Dumas, and published in May, 1922, gives us some interesting ideas, with many of which I do not agree, as,

1. Milk powders should not be kept longer than two months. Scurvy may occur if old powders are used.

I personally have used it after several months and Dr. Dennett reports no deterioration after one year's time.

2. Milk powders are not comparable with fresh milk.

While not chemically comparable, in my opinion they are most certainly far superior to a good many specimens of fresh cow's milk so far as infant feeding is concerned. Nor do I believe, as they state, that the albumen of fresh cow's milk is retained by the infant's tissues more readily than that of dried milk and that there is a greater renal effort for eliminating the mineral constituents of dried milk, nor do I consider, as they state, that the diet afforded by dry milk must be considered abnormal, or at least not more abnormal than that of fresh cow's milk mixtures.

I do agree with them when they state that dried milk is as good as other modified milk and has even better keeping qualities, when they say that it is prudent to use fruit juices with it and that, while it cannot replace breast milk, still it is useful to supplement maternal nursing and for cases when quick weaning is necessary.

Dr. John Lovett Morse, in an article published in the *Pennsylvania Medical Journal*, December, 1921, in discussing infant feeding, makes the statement that the present fad of using dried milk is fostered by the manufacturers. This statement made by so eminent an authority implies that dried milk feeding is a fad not based on a scientific background, with which I must disagree for, after all, a normal human breast will secrete dried cow's milk just as soon as it will fresh cow's milk and it is the adaptation of the food and not the food which means a well or sick baby.

Dr. Earl V. Wiednar, writing in the *Nebraska State Medical Journal*, July, 1922, after two years' experience with dry milk, comes to some very interesting conclusions:

(1). That it has a distinct advantage when there is any question as to the kind and purity of the milk.

(2). It is especially valuable as a summer food, as it is always sterile, keeps well and is easily prepared.

(3). It is very useful in traveling.

(4). It is more easily handled by the younger infants, and

(5) It is more economical as a food for complemental feeding.

I agree with these statements perfectly but, when he starts his cases immediately on orange juice and cod liver oil and adds oleomargarine to increase the fat, I personally fail to see the necessity after studying my cases for the past two years.

I realize, of course, that reporting fifty cases of any method of feeding means little as to the efficacy of that method, but it does show that any food which helps in the adjusting of infants to this world and which gives a large percentage of successful results should be used more frequently.

In this series of fifty cases that I am reporting, the infants were started on a preparation of dried milk called "Dryco," with the exception of Case 5, which was raised on "Klim," and Case 16, which was started on "Merrell-Soule" dried milk, but which was changed to "Dryco," as I considered the former had too high a percentage of fat. The earliest time of starting was five days. The oldest child started on "Dryco" was eight months. The time of continuing the "Dryco" was from two weeks to two and one-half years. Only two of my fifty cases were able to show altogether satisfactory results on "Dryco" alone. Twenty-one received "Dryco" as complemental feeding to breast milk. Of these two received breast plus "Dryco" alone and nineteen breast plus "Dryco" plus sugar. Twenty-five received no breast but "Dryco" plus some sugar, either milk, cane or a mixture of "Dextri-Maltose." The results are summarized as to

(1). Condition when started;
(2). Gain in weight;
(3). Anatomical development;
(4). Mental development;
(5). Gastro-intestinal disturbances;
(6). Sleep and contentment when awake;
(7) Color;
(8). Susceptibility to infection;
(9). Other features, and
(10). General results.

TABULATION OF RESULTS.

Number	Name	Condition When Started	Age	Feeding	Period on "Dryco"	Environment and Handling	Gain in Weight	Physical Development
1	W. B.	Poor	5 weeks	Dryco+Sugar	2 months	Poor	Good	Good.
2	S. B.	Fair	7 weeks	Dryco	6 weeks	Good	Splendid	Perfect.
3	G. B.	Fair	7 months	Dryco+Sugar	2 months	Fair	Good	Good.
4	M. C.	Poor	6 weeks	Dryco+Sugar	6 months	Fair	Good	Good.
5	J. F.	Good	2 months	Klim	2½ years	Good	Perfect	Slight Rickets.
6	C. F.	Good	3 weeks	Dryco+Sugar	6 weeks	Fair	Fair	Good.
7	H. G.	Poor	4 months	Dryco+Sugar	8 months	Good	Good	Perfect.
8	I. G.	Fair	10 weeks	Dryco+Sugar	3 months	Good	Perfect	Perfect.
9	R. H.	Good	1 week	Breast+Dryco+Sugar	7 months	Good	Perfect	Perfect.
10	W. M.	Very poor	1 month	Breast+Dryco	Off and on	Very poor	Poor	Poor.
11	W.McL	Good	2 weeks	Dryco+Sugar+Cream	18 months	Poor	Perfect	Perfect.
12	H. O.	Good	2 months	Breast+Dryco+Sugar	6 months	Good	Perfect	Perfect.
13	E. P.	Very poor	1 month	Breast+Dryco+Sugar	6 months	Very poor	Perfect	Perfect.
14	E. R.	Very poor	5 weeks	Dryco+Sugar	1 month	Very poor	Fair	Fair.
15	B. S.	Very poor	2 weeks	Dryco+Sugar	12 months	Very poor	Perfect	Perfect.
16	C. B.	Poor	4 months	Dryco+Starch	2 months	Very poor	Good	Good.
17	E. C.	Very poor	3 months	Dryco+Sugar	2 weeks	Very poor	Fair	Fair.
18	R. Z.	Poor	3½ months	Breast+Dryco+Sugar	5 months	Good	Perfect	Perfect.
19	K. W.	Poor	1 week	Breast+Dryco	12 months	Good	Perfect	Perfect.
20	J. W.	Good	1 month	Breast+Dryco+Sugar	1 month	Good	Perfect	Perfect.
21	M. W.	Good	3½ months	Breast+Dryco+Sugar	12 months	Good	Perfect	Perfect.
22	J. T.	Fair	8 months	Breast+Dryco+Sugar	3 months	Good	Fair	Fair.
23	L. S.	Fair	2½ months	Breast+Dryco+Sugar	10 months	Fair	Perfect	Perfect.
24	L. S.	Good	7 weeks	Breast+Dryco+Sugar	10 months	Good	Perfect	Perfect.
25	A. S.	Good	2 months	Breast+Dryco+Sugar	7 months	Good	Perfect	Perfect.
26	D. R.	Good	11 weeks	Breast+Dryco+Sugar	7 months	Good	Perfect	Perfect.
27	J. N.	Fair	4 months	Breast+Dryco+Sugar	4 months	Fair	Good	Good.
28	E. McC	Good	4 months	Breast+Dryco+Sugar	5 months	Good	Perfect	Perfect.
29	P. M.	Poor	3 weeks	Breast+Dryco+Sugar	6 months	Fair	Good	Good.
30	M. L.	Good	11 days	Dryco+Sugar	6 months	Good	Perfect	Perfect.
31	H. L.	Fair	1 week	Dryco+Sugar	12 months	Good	Perfect	Perfect.
32	R. J.	Fair	5 weeks	Breast+Dryco+Sugar	5 months	Fair	Good	Good.
33	L. J.	Good	2 weeks	Breast+Dryco+Sugar	12 months	Good	Perfect	Perfect.
34	P. G.	Good	2 months	Dryco+Sugar	2 months	Good	Perfect	Perfect.
35	P. G.	Good	5 weeks	Dryco+Sugar	5 months	Good	Perfect	Perfect.
36	M. G.	Good	3½ months	Dryco+Sugar	9 months	Good	Perfect	Perfect.
37	J. E.	Good	7 weeks	Breast+Dryco+Sugar	10 months	Good	Good	Good.
38	H. D.	Very poor	3½ months	Breast+Dryco+Sugar	2 months	Good	Perfect	Good.
39	S. C.	Poor	3 weeks	Breast+Dryco+Sugar	6 months	Good	Fair	Fair.
40	A. C.	Very poor	5 days	Dryco+Sugar	6 months	Good	Good	Good.
41	L. B.	Very poor	5 months	Dryco	1 month	Poor	Poor	Poor.
42	S. B.	Good	3 weeks	Breast+Dryco+Sugar	10 months	Good	Perfect	Perfect.
43	D. B.	Very poor	12 days	Dryco+Sugar	5 months	Good	Perfect	Perfect.
44	S. F.	Poor	7½ months	Dryco+Sugar	5 months	Good	Good	Perfect.
45	L. P.	Very poor	5 weeks	Dryco+Sugar	1 month	Very poor	Fair	Fair.
46	M. W.	Good	5 weeks	Dryco+Sugar	9 months	Fair	Perfect	Perfect.
47	H. K.	Good	4 weeks	Dryco	1 month	Good	Perfect	Perfect.
48	W. Y.	Fair	10 weeks	Dryco+Sugar	3 months	Fair	Fair	Good.
49	J. K.	Poor	4 months	Dryco+Sugar	3 months	Very poor	Fair	Fair.
50	C. T.	Fair	9 weeks	Dryco+Sugar	2 months	Fair	Perfect	Perfect.

I shall not go into these at length, but will state that the result, in my opinion, was as perfect as either mother or doctor could wish for in thirty-two cases, good in twelve cases, fair in two cases, and poor in four cases.

All of those which were classed as poor were sick infants with miserable home conditions and handling, and in a pitiable state of marasmus when started.

One of the two cases classed as fair, I expect to become good.

There are a few points brought to my mind by a study of these cases:

In Case 2, the baby, seven weeks old, was nursing an empty breast when put on "Dryco" alone. It progressed perfectly for six weeks, when it was taken to its home in New York City. There the doctor told the mother that

TABULATION OF RESULTS.

Number	Name	Mental Development	Gastro Intestinal Disturbances	Sleep and Contentment When Awake	Color	Susceptibility to Infection	General Results	Notes
1	W. B.	Good	None	Fair	Good	Normal	Good	
2	S. B.	Perfect	None	Good	Good	Normal	Perfect	Note in article.
3	G. B.	Good	Occasional Colic	Good	Good	Normal	Good	Note in article.
4	M. C.	Good	None	Good	Good	Normal	Good	
5	J. F.	Perfect	None	Perfect	Perfect	Normal	Good	
6	C. F.	Good	Several	Poor	Good	Normal	Good	
7	H. G.	Perfect	Several	Perfect	Good	Normal	Good	
8	I. G.	Perfect	None	Good	Good	Normal	Perfect	
9	R. H.	Perfect	None	Perfect	Perfect	Normal	Perfect	
10	W. M.	Poor	Often	Poor	Poor	Often	Poor	
11	W.McL	Good	Few	Perfect	Very pale	Normal	Good	
12	H. O.	Perfect	None	Perfect	Perfect	Normal	Perfect	
13	E. P.	Perfect	Several	Good	Good	Normal	Perfect	Note in article.
14	E. R.	Fair	Often	Fair	Fair	Very	Poor	
15	B. S.	Perfect	Occasional	Good	Perfect	Normal	Perfect	
16	C. B.	Good	Occasional	Good	Good	Normal	Good	
17	E. C.	Poor	Often	Poor	Fair	Very	Poor	
18	R. Z.	Perfect	None	Perfect	Perfect	Normal	Perfect	
19	K. W.	Perfect	None	Perfect	Perfect	Normal	Perfect	
20	J. W.	Perfect	None	Good	Perfect	Normal	Perfect	
21	M. W.	Perfect	Occasional	Perfect	Perfect	Normal	Perfect	
22	J. T.	Fair	Occasional	Good	Fair	Normal	Good	
23	L. S.	Perfect	None	Perfect	Perfect	Normal	Perfect	
24	L. S.	Perfect	None	Perfect	Perfect	Normal	Perfect	
25	A. S.	Perfect	None	Perfect	Perfect	Normal	Perfect	
26	D. R.	Perfect	None	Perfect	Perfect	Normal	Perfect	
27	J. N.	Good	Frequent	Good	Pale	Very	Good	
28	E. McC	Perfect	Few	Perfect	Perfect	Normal	Perfect	
29	P. M.	Perfect	Few	Perfect	Perfect	Normal	Perfect	
30	M. L.	Perfect	None	Perfect	Good	Normal	Perfect	
31	H. L.	Perfect	Few	Perfect	Perfect	Normal	Perfect	
32	R. J.	Good	None	Good	Good	Normal	Good	
33	L. J.	Perfect	None	Perfect	Perfect	Normal	Perfect	
34	P. G.	Perfect	None	Perfect	Perfect	Normal	Perfect	
35	P. G.	Perfect	None	Perfect	Perfect	Normal	Perfect	
36	M. G.	Perfect	None	Perfect	Perfect	Normal	Perfect	
37	J. E.	Perfect	Occasional	Good	Good	Normal	Perfect	Note in article.
38	H. D.	Perfect	Occasional	Good	Good	Normal	Perfect	
39	S. C.	Perfect	None	Poor	Fair	Normal	Perfect	Note in article.
40	A. C.	None	None	Good	Good	Normal	Perfect	
41	L. B.	Fair	Frequent	Perfect	Fair	Normal	Poor	
42	S. B.	Perfect	None	Perfect	Perfect	Normal	Perfect	
43	D. B.	Perfect	None	Perfect	Perfect	Normal	Perfect	
44	S. F.	Perfect	None	Fair	Perfect	Normal	Perfect	
45	L. P.	Fair	None	Perfect	Fair	Normal	Fair	Note in article.
46	M. W.	Perfect	None	Perfect	Perfect	Normal	Perfect	
47	H. K.	Perfect	None	Good	Perfect	Normal	Perfect	
48	W. Y.	Perfect	Frequent	Good	Good	Normal	Good	
49	J. K.	Fair	Occasional	Good	Pale	Normal	Fair	
50	C. T.	Perfect	None	Perfect	Perfect	Normal	Perfect	

"Dryco" was not a correct food for babies, it fattened but gave no strength. He took it immediately off of the dried milk, and put it on fresh cow's milk. The baby had a violent diarrhea, and lost weight rapidly. One of the most distinguished pediatrists of New York City was called in. He, too, for what reason I know not, stated that "Dryco" was a fattening food and not correct for infant feeding. After much trouble and expense, including an operation for mastoid, the baby was finally straightened out. If there could be any more foolish handling of a baby progressing nicely, I have yet to come across it. Even the mightest can err.

Case 3 had an imperforate anus, with passage of the feces through the vagina, but, on "Dryco," "Dextri-Maltose" and starch, the

stools were kept soft enough to prevent irritation to the vaginal canal and the child progressed nicely.

Case 13 progressed perfectly on "Dryco" and "Dextri-Maltose" until it had a general pyemia and double otitis, and, even through the final illness, the stools were remarkably good.

Case 37, while on the breast and "Dryco," progressed nicely in spite of several illnesess, catarrhal otitis, bronchitis, and influenza.

Case 39 was a cerebral hemorrhage case, which at five days seemed at the point of death. However, it developed physically well on "Dryco" and "Dextri-Maltose" until its death at seven months.

Case 45, which at present is classed as only fair, was started under the most unfavorable circumstances. The baby responded perfectly to the treatment it was receiving of being fed as much as it wanted whenever it cried, of whatever the mother guessed was right, and had two convulsions and temperature 106°. After a thorough cleaning out, it was started on "Dryco" and seems to be progressing satisfactorily.

After studying these cases in private practice and others at the Petersburg Child's Welfare Centre, I have come to the following conclusions:

(1). "Dryco" is a most valuable adjunct in infant feeding, and should be in use by every doctor who feeds infants, not on all cases, of course, but each should become familiar with it and its advantages;

(2). As a complemental feeding to the breast, it is of first choice, because it is clean, easily handled, easy of digestion and seems to fit perfectly with whatever breast milk is available;

(3). "Dryco," fed alone, is not as successful as "Dryco" plus some corbohydrate, for, I believe, in opposition to many pediatrists, but in accord with some, that most infants thrive best on at least seven per cent. sugar and at times higher;

(4). It is advisable to add orange juice at the age of three months, for I trust no food which has been subjected to heat as to the viability of the vitamines;

(5). Fresh cow's milk should be added to all children's dietary by the tenth month, for it is to be given throughout the entire life of the child, whether a breast or bottle baby;

(6). If there is any difference between the results of a baby raised to beautiful childhood on "Dryco" or fresh cow's milk, my cases have failed to show it; and

(7). The more dried milk is used, the more secure the physician feels as to the safety of the infant, and the more pleased he is with the results.

In concluding, let me say that I would refer any one to Dr. Dennett's paper for the methods of giving "Dryco," as to the percentages and calories, and the general rules for prescribing it for infants, but I belive firmly that there is no method as good as the careful watching of the individual infant and varying the food according to the needs of that individual infant. Successful infant feeding is, in my opinion, a critical, careful attention to details.

Discussion.

Dr. W. L. Harris, Norfolk: This subject of infant feeding, of course, is one that interests all of us and especially those who do much work with children. Of course, there have been fads in infant feeding from time immemorial and a most amusing thing to me is how people are always ready to jump at something new and drop something that has been entirely satisfactory.

I look upon dry milk as a makeshift to be used only under certain conditions; to be used in traveling, or among the poorer people who can not buy or properly keep fresh milk. I do not believe any canned goods is a substitute for fresh goods. I believe we can feed children successfuly on almost anything for a certain number of cases. We may have fifty cases or a hundred, but if we are compiling statistics they should cover many thousand cases.

I do not wish to attempt to run down dried milk but I don't want any of you to think it is a substitute for cow's milk properly handled. I use it very little, and I have had to take a great many cases off it that were sent to me that were not doing well. I do not believe we ought to be overly enthusiastic over dried milk any more than we should over condensed milk or malted milk or some other prepared infant foods. Dried milk is undoubtedly the best of all these canned goods, because it has a reasonable proportion of fats and proteids, but it should not in any sense be considered a satisfactory substitute for fresh cow's milk and should be used only for temporary use, such as in traveling or it may be used when good cow's milk is not to be had or among the poor who cannot properly keep or handle fresh cow's milk.

Dr. W. B. McIlwaine, Petersburg: I have very little further to add. Whether in the cities or in small communities or in the country, I think Dryco is a great adjunct to infant feeding. I don't quite see how it can be called a fad any more than you would call feeding on cow's milk a fad. Fresh cow's

milk is just as abnormal for infant feeding as dried milk; the only normal food is mother's milk.

I feed babies a lot of fresh cow's milk. I have seen infants fed on cow's milk in New York and Boston and I have seen them fed on dry milk, and I have fed them on both. I think Dryco will be found of use in the handling of infants in any community.

AN EXANTHEM OCCURRING IN INFANTS, WITH UNUSUAL SYMPTOMATOLOGY.*

By CHARLES E. CONRAD, M. D., Harrisonburg, Va.

The condition I wish to call attention to does not appear in the text books though many of you may have seen similar cases. It consists of a high fever, about 104° F., with restlessness and loss of appetite, lasting three or four days without any definite physical findings, then a sudden drop in temperature; about twenty-four hours after the baby's temperature returns to normal, there appears a red macular and maculo-papular eruption over the body which resembles the rash of measles in appearance. In the two cases I saw, the rash began on the upper portion of the chest, rapidly extending over the trunk and to a less degree to face and extremities. Both cases were under two years of age, one twenty-one months and one eight months. The latter was breast-fed except for two to four ounces of cow's milk a day which had been given three or four weeks.

Aside from the high temperature, 104° F. in one, 104.5° in the other, fretfulness and loss of appetite, I was unable to find any physical signs to account for the high temperature.

Both babies had sudden rise in temperature, were very fretful, and refused most of their food. They had not vomited, stools were normal, throat and tonsils were normal and ear drums normal in appearance; in fact, as stated above, I was unable to make out any cause for the fever. Temperature, when first seen, was 104° F. in one and 104.5° in the other. This high temperature and restlessness continued three days without developing any other physical signs. In one case, the mother 'phoned me in the morning of the fourth day it was not necessary for me to return, as the baby did not have any fever, was playful and hungry. That afternoon she 'phoned that I should come, as the baby was "all broken out." When I saw the baby, she had a rectal temperature of 98° F., was playful and happy, with a bright red macular and maculo-papular eruption, resembling the rash of measles, over chest, abdomen and, to a less extent, over face, neck and extremities. The rash lasted three days, and I was unable to make out any scaling. Child was never uncomfortable and did not have any return of fever after the initial drop in temperature.

Urine examination was negative. Blood count, which was done on the younger baby, gave a white blood count of 4,600 and a differential count of 11% polymorphonuclears and 89% lymphocytes, showing a leukopenia with lymphocytosis.

The condition does not appear to be contagious, as in both homes were two other young children and none of them contracted it, although brought in direct contact.

Diagnosis.—During the pre-eruptive stage, one would think of pyelitis or acute otitis media, but both were easily ruled out, or the so-called central pneumonia. After the eruption appears, one would think of measles or rubella.

In measles you have the coryza, Koplik spots, and the eruption appearing at the height of the fever.

In rubella there is usually glandular involvement, and the rash appears with the fever.

Summary.—We have a disease occurring in infants, with a high fever, loss of appetite, and fretfulness, without any physical signs, and twelve to twenty-four hours after the fever subsides there appears a macular and maculo-papular eruption. After the febrile stage, the infant is perfectly comfortable and happy, and does not appear to be at all sick during the period of the rash. With this there is a leukopenia, with lymphocytosis.

Zahorsky has called it "Roseola Infantum." Veeder and Hempleman suggest "Exanthem Subitum," and Greenthal in cases reported by him does not suggest a name but believes as I do that this is a definite disease entity.

References.

Zahorsky, John: Roseola Infantilis, Pediatrics, 1910, XXII, 60.

Veeder, Borden S., and Hempelmann, T. C.: A Febrile Exanthem Occurring in Childhood, (Exanthem Subitum), Journal Amer. Med. Assoc., 1921, LXXVII, 1787.

Greenthal, R. M.: An Unusual Exanthem Occurring in Infants, Am. J. Dis. Child, 23:63 (Jan.) 1922.

Park, J. H. and Michael, J. C.: A Peculiar Eruptive Disease Occurring in Infancy. Am. Jour. Dis. Child., 1922, XXIII, 521.

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, 1922.

BALANCING THE RATION IN SEVERE DIABETES.*

By ALEXANDER G. BROWN, JR., A. B., M. D.,

Associate Professor of Medicine, Medical College of Virginia. Internist, Stuart Circle Hospital, Richmond Va.

If there are a half million diabetics in this country and if obese persons are candidates for the diabetic state, it would seem that one may rightfully approach the much discussed question of balancing the ration of the diabetic with the assurance of dealing with a subject worthy of every interest on the part of the medical profession. There are two factors, apparently, that enter into this widespread and increasing incidence of diabetes. One of these factors is the prevalence of obesity or overweight in the people of this country: a striking characteristic of the candy-and-starch-eating-Americans. The other factor is the focal infections. The breaking down of the carbohydrate mechanism of the body may be brought about by the constant and lifelong over-use as well as by the pathologic injury from some infective process. Every precaution for proper regulation of the diet of persons with overweight and the eradication of lurking infections should be put into effect.

Diabetics may become active workers in the campaign for the reduction of weight of the obese. This is one way by which the control of diabetes may be more easily brought about. At the same time extremely useful instruction and education may be given the mild diabetic for his dietary guidance in after life. Instruction in the problem of diabetic feeding intelligently handled by the physician, excites a wonderful enthusiasm in the mind of the layman and makes him an alert pupil and loyal disciple of accurate feeding.

However, from the standpoint of medicine, one may say that the last word concerning the diabetic management of diabetes has not been as yet said. Clinicians reading the literature and working actively in this field can hardly fail to be impressed with the rapidly changing thought on this question. Fortunately, in these latter days, the constantly modifying lines of diet are more complementary than antagonistic. In fact, this satisfying characteristic stands out boldly as a beacon of hope: very contrary to a former time, with its oatmeal-diet, its banana-diet, its milk-diet, its potato-diet, etc. Then, there was much confusion and many conflicts in the treatment of diabetes mellitus. At the same time, as one now hears advocates of a dietary of very different values in certain types, the conclusion in that final decision, as to what diet is correct in diabetes in severe type, is not reached as yet. In these days, however, all appear to agree on certain fundamental principles to be sought and to be prevented in rationing the diabetic. The differences of method are merely in the refinements of the balancing and proportioning rather than in the sort of food to be used. All agree that the great purpose is to make the diabetic sugar-free in urine; to bring the blood sugar within reasonable limits to normal; and to prevent the formation of the ketones in the blood in excess as shown by marked occurrence of acetone bodies in the urine. All agree, it seems, that this is rather satisfactorily accomplished in the incipient and mild cases of diabetes by the fast; the measured or restricted carbohydrate diet; and gradual loss of weight in the obese. But in the severe cases (of diabetes) there is room for greater unanimity in the scheme of the dietary management.

To overcome this partial failure some recent work has been done with the view of more carefully balancing the fat-protein-carbohydrate elements in order to prevent sugar-urine and acidosis. Whereas "the carbohydrate tolerance" was the state sought in the recent past, in the diabetic, now, the "nitrogen balance" and the "ketogenic antiketogenic balance" and "basal metabolism rate" are present-day states to be found in the management of severe diabetes.

Ketosis is the "terror" of diabetes. These substances arise from the fats. If proper carbohydrates are available these poison products of fat are prevented. Some one has aptly put it that "the fats are burned in flame of carbohydrates." Only in presence of available carbohydrate can ketosis be prevented.

In the light of these more recent advances in dietary management of diabetic patients, the following principles should be observed: (1) a limited diet-calory, (2) a limited and gram-measured carbohydrate diet (ketogen and antiketogenic balance), (3) a limited and definite gram protein diet (nitrogen balance), a high fat diet in grams to secure needed calories, protected by sufficient grams of carbohydrates to prevent ketosis.

*Read by title at the fifty-third annual meeting of the Medical of Virginia in Norfolk, October 31—November 3, 1922.

Owing to the leadership of Allen, who revived the fasting treatment in diabetes and urged the importance of resting the carbohydrate mechanism by restricting the total calory, the general principle that diabetics should practice a definite restriction of diet with a view to a reduction in bodily weight and to a slowing of the metabolic rate is now generally followed in the diabetic therapy.

Wilder's interesting article has recently pointed out the confusion that has arisen in regard to the loss of body weight alone in the improvement of carbohydrate tolerance. He has pointed out that an excess of protein intake produces an increase in metabolic rate in diabetes and that a too rigid fasting or starving diet, which requires the body to draw upon the body protein causes a high metabolic rate. So a low maintenance food total should be so balanced as to slow the metabolic rate (controlled by protein adjustment in non-hyperthyroid and non-ketogenic cases) and this adjustment should give adequate nutrition, with no gain of weight in body mass. Under this balance of restricted diet the diabetic moves in a slow metabolic rate which is more favorable for diabetic well being.

Nitrogen-Balance-in-Diabetes.
(Protein Restriction).

Marsh, Newburgh and Hally, cited by Wilder, should be credited with pointing out the need for restricted protein grams intake in diabetes. The following points are cited to support the importance of a definite restriction of protein:

(1). Protein is convertible into sugar by weight 58 per cent; thus, when used over minimal requirements adds sugar to the diet;

(2) Protein, when over minimal requirements, tends to produce "an undesirable elevation of the metabolic rate";

(3). Excess of proteid, over nitrogen balance requirements, depresses the ability of the body to oxidize glucose.

Wilder cities the publications of Marsh, Newburgh and Hally, to show that minimal protein requirements for normal and diabetic persons receiving minimal total calories for weight maintenance should never be over two-thirds of a gram per kilogram body weight. This may be increased in children for growth requirements to one gram per kilogram body weight. This proteid allowance is expected to maintain a nitrogen balance, which will not add sugar, not increase the metabolic rate and not interfere or depress glucose oxidation. Nitrogen balance is thus a first step in diabetic dietary.

Carbohydrate Tolerance.

The widespread practice in all forms of diabetes (mild and severe cases) of determining the carbohydrate tolerance has clearly placed this phase of low carbohydrate feeding upon a firmer footing. In severe cases, where the tolerance is apparently nil, it would seem necessary to interdict the use of all possible forms of actual carbohydrates and to rely upon the high fats and the proteid (sugar) for body maintenance. But this practice brings the patient to the poisonous state of ketosis. So it is necessary to work upon a basis of diet, framed upon the fundamental minimal protein requirements, thus cutting out all sources of sugar and adding a carbohydrate quota to the diet sufficient to "pace" the high fats to the point of minimal calories for the body strength and weight, without ketosis.

High Fats (Ketogenic Antiketogenic Balance).

Every therapist has had disastrous results in the high fat diet. Many have had to restrict the high fat because of the diabetic coma, of the acidosis, of the ketosis. So recently the high fat diet has been avoided. But Newburgh and Marsh have obtained interesting and telling results on high fats diet in relation to a nitrogen balance and a minimal amount of carbohydrate allowance. It seems then, in the light of Newburgh's results, safe to allow for the low-caloric value of a diet enough in carbohydrates and proteins the additional fats to supply minimal daily caloric requirements. The ketogenic products of fat metabolism are kept out of the body by balancing in the diet anti-ketogenic glucose.

It seems quite obvious then that if the protein over minimal requirement is capable of being converted into sugar to the amount of 58 per cent of its weight, if it influences the metabolic rate, if it is given in excess of required amount for balancing the nitrogen loss of the body, it is especially depressing upon the body in utilizing it for glucose, and if two-thirds gram per kilo body weight of patient is the ideal amount, we have secured a fundamental work-point of metabolism in balancing

the diet of the diabetic for the prevention of acidosis.

To utilize properly the recent work in dieting severe cases of diabetes, it is necessary to recall that the calory and nitrogen values of diet must meet the needs of the total calory requirements of the body and also the nitrogen balance of the protein metabolism. If the body is required to call upon its own fat, protein acidosis bodies form.

The calculation of diet by use of the chart for basal metabolic rate determinations merely adds another refinement to the computation of the diabetic feeding. There is a known basal rate based on factors of age, sex, height and weight for surface area. I have found in treating severe diabetes, Dubois' "A" Chart prepared by Boothby and Sandiford very useful for accurate and easy calculation of normal basal calory requirements. And when used in connection with Wilder's suggested diabetic chart, based on 2/3 gram allowance of protein for each kilo body weight, we have a ready method of balancing the factors of carbohydrate-protein-fat on the basis of high fat, low carbohydrate and 2/3 gram protein kilo body weight. By this system of feeding we obtain usually (1) a sufficient caloric value for body weight and strength, (2) a free or low sugar in the urine, (3) no acidosis.

REFERENCES.

Jour. A. M. A. January 7, 1922, Holmes: Simplification of Woodyatt Method for Calculating the Optional Diabetic Diet.

Jour. A. M. A. January 8, 1921, Joslin: The Prevention of Diabetes Mellitus. March 4, 1921, Editorial: Obesity & Diabetes. April 15, 1922, Editorial: Changing Tendencies in Dietotherapy of Diabetes. June 17, 1922, Wilder: Optional Food Mixtures for Diabetic Patients.

THE VALUE OF BASAL METABOLISM STUDIES IN THYROID DISEASE.*

By JAMES H. SMITH, M. D., Richmond Va.
Associate in Medicine, Medical College of Virginia.

The place in the clinic of any new method must be determined by clinical standards. A reasonable simplicity of technique is one requirement; that the use of the method shall square with end results in the clinic is another. With regard to indirect calorimetry, the former has been achieved; the test of the latter must await the lapse of considerable time. Data are rapidly accumulating, however, establishing the value of the method. To this end, it seems useful to compare symptoms and signs and clinical course on the one hand, with metabolism studies on the other. To avoid too much detail, a few generalizations are necessary.

Six symptoms or symptom-groups may be considered more or less diagnostic of thyroid overactivity, viz: Goiter, exophthalmos and other classical eye changes, tachycardia, nervousness, loss of weight, and tremor. As is well known, the significance of thyroid enlargement does not vary directly with its size, but rather with its associated symptoms. The exophthalmos of toxic goiter is usually easy to distinguish from a normal even though exaggerated prominence of the eye-ball, and is confirmed by the presence of the Stelwag, von Graefe and Moebius signs. The term tachycardia will be arbitrarily used to refer to a pulse rate usually over 100 and not falling below 90 even under the basal conditions of the test. Nervousness and tremor are necessarily somewhat vague terms, but by loss of weight is meant something more than five per cent. of the recent normal body weight. The plan of this paper is an analysis of these symptoms and signs as compared with the basal metabolic rate in 101 tests on 84 patients.

Goiter, exophthalmos and tachycardia are rarely seen without the other classical symptoms, and, occurring together, are practically diagnostic of exophthalmic goiter.* Eight cases were in this group with rates between plus 51 and plus 97.

Exophthalmos may be lacking, but if there is goiter, tachycardia, and either marked loss of weight, nervousness, or tremor, hyperthyroidism may be considered to exist in the absence of other apparent cause for the symptoms. There were 18 such instances, with rates between plus 21 and plus 59.

In the 26 tests referred to in the two preceding groups, there was a rough general agreement as to the severity as gauged by the clinical and metabolic standards, respectively. It is also interesting to note that the exoph-

*Read by title at the fifty-third annual meeting of the Medical Society of Virginia, in Norfolk, October 31—November 3, 1922.
*Read before the thirty-fifth stated meeting of the South Piedmont Medical Society, in Lynchburg, Va., November 21, 1922.

*Lieb, Hyman and Kessel, (J. A. M. A., 79, 14, p. 1099) report 86 caes, "with many or even all of the classical clinical symptoms of the textbook picture of exophthalmic goiter," with a normal basal metabolism and who "did not suffer from that disease."
The small series herein reported includes no case in any sense presenting the classical picture of exophthalmic goiter with a normal metabolism. One case with all the classical signs except goiter, had a rate of plus 40.

thalmic group showed a distinctly higher average rate than the group without exophthalmos.

Next to be considered is a group of 39 tests done for a thyroid condition giving normal metabolism figures, between minus 10 and plus 10. Of these there were 16 cases with more or less of nervousness, loss of weight, or tremor, or a combination of these symptoms. Manifestly, thyroid hyperactivity is not clinically established, and a normal metabolism rate is hardly open to question on clinical grounds. It may seem that this conclusion should have been reached independently of the metabolism test. The fact remains that these 16 cases were referred by ten practitioners of recognized ability, most of them sent with the special purpose of determining the metabolism, the thyroid being under suspicion. The test may, therefore, be considered useful in these cases.

Fourteen other cases were in practically the same group symptomatically, but with some enlargement of the thyroid, varying from a little fullness to moderate enlargement, and showing normal metabolic rates. It is to be noted here that no considerable increase in pulse rate was present in any, and, of course, no exophthalmos. It may well be questioned whether the metabolic rate in these cases may be accepted as conclusive. To date, I have no reason to believe that any of them were misleading.

The remaining 9 cases in this group of normal rates are quickly accounted for. Two were cases previously operated on for exophthalmic goiter. In one, the post-operative condition was far from being as satisfactory as the metabolic rate would indicate, though the pulse rate was normal. Her metabolism had not been done prior to operation. The other showed clinical improvement almost commensurate with the metabolism.

One case had returned to normal clinically and in rate following removal of infected tonsils. There had been an unquestionable toxic thyroid activity with a rate of plus 33.

Six were examined for subactivity of the thyroid, chiefly on account of obesity, and were found to have rates within normal limits.

The kind of goiter which, by reason of its characteristics and the absence of so-called toxic symptoms, we call non-toxic, simple or colloid, may be expected to give a normal or lowered metabolism. In the three cases of goiter of this type in the series, the rate was normal.

The preceding definitions probably make sufficiently clear what is referred to as clinically border-line hyperthyroidal states. As illustrative, may be cited Test No. 50, a female, aged 32, thyroid moderately enlarged for six years: somewhat nervous, slight tremor and loss of weight. No tachycardia nor exophthalmos. Basal metabolic rate plus 17. In this group classed as border-line clinically, and with rates from plus 11 to plus 20, there were 18 cases.

The series included 3 subnormal rates, two of minus 13 each and one of minus 27. One of the cases with a rate of minus 13 was considered to be due to pituitary hypofunction; the other was an instance of thyroid poverty, having previously shown a rate of minus 30 and having taken thyroid extract. The rate of minus 27 was also in a case showing clear signs of thyroid underactivity.

Eight additional cases gave normal figures, but the thyroid was not under suspicion.

There have been mentioned 97 tests which, by the best standards I am able to apply, were a true index of the thyroid condition. I wish now to refer to 4 tests which were considered unsatisfactory, though none could have led to gross error if interpreted with reasonable conservatism.

Anyone familiar with the technique of indirect calorimetry, can readily mention several sources of error toward the plus side. One of the most prolific sources of trouble is a leak in the apparatus or in the adjustment of the nose and mouth pieces. Some such trouble probably accounted for a reading of plus 27 in Test No. 40. This was higher than the clinical condition seemed to justify and, when repeated two days later, a rate of plus 9 was obtained. Similarly, Tests Nos. 97 and 104 resulted in questionable rates of plus 23 each, without the opportunity being afforded to repeat the work.

On the other hand, there is less apparent risk of getting too low readings. I know of no likely causes other than mathematical errors, subnormal body temperatures, and shock. Nevertheless, Test No. 72 gave plus 11 though the patient had thyroid enlargement (noticed only a few days before), loss of 8 per cent. body weight, pulse 92 to 100, was nervous and had a fine tremor. The test re-

peated seven weeks later showed a rate of plus 17, in spite of the fact that the pulse rate was 20 beats per minute slower. It is true that the symptoms were recent in onset, but one would expect the metabolic rate to be influenced at least as early as signs arise.

Metabolism determinations by no means settle all the questions raised by the thyroid gland, as illustrated by Test No. 3. A female, aged 54, had two partial thyroidectomies for exophthalmic goiter. Following the second, she developed slow pulse (in the fifties). sensitiveness to cold, gain in weight, painful lower extremities, and an extensive dermatitis. The eyes remained exophthalmic and deep reflexes very active. Thyroid extract seemed beneficial in spite of the fact that the metabolic rate was found to be plus 25 and plus 24 by different technicians and different types of apparatus, no thyroid extract having been administered for more than two weeks previous to the tests. The patient states that she can tell when the indications arise for resuming the thyroid extract.

Test No. 92 gave a rate of plus 21 with normal body temperature. A day or two later her physician discovered tubercle bacilli in the sputum. It is not unlikely that the metabolic rate represented accurately the activity of the thyroid. In a previous paper,* I discussed the relationship of hyperthyroidism and tuberculosis, and called attention to the danger of radical treatment of the thyroid when active tuberculosis exists.

Test No. 93 gave what might be called a genuine thyroid figure, plus 38. She was, however, the subject of severe nephritis; blood pressure 250/170; phthalein output 5 per cent. in two hours. Others have reported similar cases, and no conclusion as to thyroid function should be drawn from the metabolic rate alone.

The foregoing analysis is summarized in Table I.

A. Rates over plus 20, clinically hyperthyroid:		
(a) With goiter, exophthalmos and tachycardia	8	
(b) Without exophthalmos; with goiter, tachycardia and other symptoms or signs	18	
		26
B. Rates between minus 10 and plus 10:		
(a) With a combination of nervousness, loss of weight, and tremor, but without goiter, exophthalmos or tachycardia under basal conditions	16	
(b) Same as (a) except for the presence of more or less thyroid enlargement	14	
(c) Previously operated for toxic goiter	2	
(d) Previously toxic goiter returning to clinical normal after tonsillectomy	1	
(e) Obesity	6	
		39
C. Rates plus 11 to plus 20; clinically borderline hyperthyroid		18
D. Rates minus 10 to plus 10; colloid goiters		3
E. Subnormal rates, minus 13 to minus 27:		
(a) Clinically hypothyroid, minus 13 and minus 27	2	
(b) Clinically hypopituitary, minus 13	1	
		3
F. Rates minus 10 to plus 10; a clinically miscellaneous group not suspected of thyroid abnormality		8
G. Rate moderately increased, plus 23 to plus 27, not clinically confirmed:		
(a) Plus 27 repeated with result of plus 9	1	
(b) Plus 23 and plus 23 not repeated	2	
		3
H. Rate plus 11, apparently too low, seven weeks later plus 17		1
		101

Discussion.

The limits of the paper have made it necessary to confine our subject to the thyroid. Little confusion is apt to arise from other diseases which affect the rate of metabolism, for these are not often difficult of recognition.

On the plus side are the severe anaemias, leukemia, and febrile states; on either the plus or minus side, diabetes, and abnormal pituitary and adrenal states. The last two, on account of the frequency of mixed endocrine abnormalities, are most apt to be misinterpreted.

The method used in the cases reported, was the determination of oxygen consumption without regard to carbon dioxide output. The apparatus was one of the simplest of the many varieties now on the market. It contains no blower and requires no electrical connections. I can well understand the aversion of a thorough-going scientist to methods introducing larger factors of error in studies of functional pathology. I am not sure that this objection is at all applicable here, but to the clinician, a workable instrument, if it is reasonably accurate, is more useful than one giving ultra-refinement of results at the cost of all considerations of time and circumstance.

With regard to metabolism and the thyroid, we must think in terms of tens rather than ones. No matter where we set the figures for normal, one above or below means nothing.

*Differential Diagnosis between Pulmonary Tuberculosis and Hyperthyroidism; Southern Med. & Surg., Dec., 1921.

If a patient with a rate of plus 45 has received treatment, and the rate is later found to be plus 42, I will not say that nothing has been accomplished, because further improvement may yet come, but the slight difference in rate does not indicate that anything has been accomplished. Minus 13 means very little more than minus 10. One would probably give some thyroid preparation in one case about as readily as in the other.

A distinction should be made between acceptable figures, believed to be indicative of the true basal rate, and the interpretation put on those figures. As already suggested, it should be borne in mind that figures above normal are more likely to be in error than normal or subnormal figures. As Means and Burgess* put it: "The finding of normal rates in persons suspected of having hyperthyroidism practically rules that condition out, but the finding of an elevated rate does not necessarily rule it in."

Such scattered references as have been made to therapeutic procedures are purely incidental. Sufficient time has not elapsed to justify conclusions as to comparative values of different methods. With one exception already mentioned, clinical improvement was as a rule faithfully reflected in the metabolism.

Neither metabolic studies nor any other criterion has as yet resulted in general agreement on the treatment of hyperthyroidism. Nevertheless the severity of the disease in a given individual must influence everyone. The metabolism, therefore, as an index to severity, should prove helpful to the clinician in applying such ideas of treatment as he may hold. Particularly is this true when the rate is found to be rising on consecutive tests such circumstances being usually regarded as contraindicative to operation at the time. As a means of estimating the results of treatment, the metabolism is perhaps the best single index.

For diagnosis, the metabolic rate is often unnecessary, but it is just in this type of case that its value as a gauge of progress is greatest. A border-line case found to have a border-line metabolism, may result in a border-line state of mind in the clinician. This would seem to be exactly what the interests of the patient demand. The metabolic rate should never be interpreted independently of the clinical condition, but it is perhaps the most significant single index of thyroid activity.

*Means, James H. and Burgess, Harriett W.: Arch. Int. Med.; 30, No. 4.

DELAYED UNION IN NON-INFECTED WOUNDS ABOVE THE UMBILICUS.*

By ARTHUR S. BRINKLEY, M. D., Richmond, Va.

Having had several cases of delayed union in wounds of the epigastrium, in or near the mid line, without apparent cause, I decided to look up the literature to see what I could find out about the matter. I found only two articles bearing directly upon the subject. The first is by Robert T. Morris, of New York City, and was published in the *Journal of American Medical Association*, June, 1911. The title of this paper, "The Gastric Weak Line," is very pertinent. The second is by Miles Porter, of Fort Wayne, Ind., and was published in the *American Journal of Obstetrics and Diseases of Women and Children*, Vol. 10, 1914.

I will quote at length from Porter's article. In his paper he states that Morris' article is the only one he could find in the literature bearing directly on the subject. He quotes excerpts from letters written by a number of his surgical friends. Of the operators from whom he received replies, fifteen express the opinion that mid line epigastric incisions were peculiarly prone to delayed union, and five had never observed any difference from wounds above the umbilicus. Following are excerpts from some of the replies received by Dr. Porter:

"Abbe writes that it is notorious that incisions in the epigastric region need extra support in suturing. Jonas also, who has had no experience with delayed union in epigastric wounds, attributes his freedom from this annoyance to the fact that he takes particular care in suturing these wounds, and leaves the non-absorbent stitches in situ for ten days or longer. Oliver and Eastman, of Indiana, and Bloodgood, of Baltimore, attributed the trouble they had had to catgut. Deaver says he sees no reason why wounds in any part of the abdomen should not heal satisfactorily in the absence of infection. Morris says the failure to repair of wounds in the abdominal wall after stomach operations is due to trophic or neuro-

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

vascular disturbances, associated with sensory nerve disturbance in the sensory zone of Head. W. J. Mayo and Willy Meyer are inclined to the opinion that soiling of these wounds with gastric or bowel secretions produces a necrosis of the cells, and thus delays the union. A. G. Gerster reports that he has found union in wounds above the umbilicus tardier in all cases of malnutrition, especially cancer in its progressed stages; but he says further back of all there must lie biochemical causes, as yet unknown to science. Brewer states that he believes that malignancy plays an important part and, where it does not exist, he feels that they heal as readily as other wounds. Powers, of Denver, remarks that all of his cases occurred in people far reduced in general health. Meyer, Eastman, Abbe, Lilienthal, Finney, and others, lay stress on the tension of the abdominal walls, due to muscular pull, as a cause of non-union in epigastric wounds. Eastman refers especially to the sudden tension these wounds are subjected to through sneezing and coughing, by reason of the close proximity to the diaphragm."

In order to get a more general opinion regarding the subject, I wrote seventeen prominent surgeons in different sections of the country, and so far I have heard from fifteen of them. Nine of this number had experienced trouble with non-infected wounds in this area, and six had not noticed any especial difference in the healing of wounds above or below the umbilicus.

Erdmann writes: "I have observed in our institution, as well as in other institutions where I have worked, that a certain percentage of patients suffering with gastric carcinoma, or those badly impoverished by some other type of disease, will not unite; that they break down somewhere between the fifth and eighth day, and in many of those no vestige of catgut is to be found. A simple suture sewing through and through with silkwormgut is followed in all these patients with union." He estimates roughly that it occurs in one-tenth of one per cent. of his patients.

Horsley reports that he has no definite statistics, but is confident that there is a very decided tendency toward slow healing in abdominal wounds above the navel. His explanation is as follows: "There is more motion in the abdominal wall above the navel than below it, and this constant motion renders healing slower, explained on the same principle as wounds in the region of the sphincter ani which do not heal readily until the motion of the sphincter is temporarily abolished." He also thinks the rigid margin of the ribs makes more tension on wounds in this area. He does not believe Head's theory of some peculiarity of innervation holds good.

Finney remarks that on a number of occasions he has seen perfectly clean wounds, the edges of which for some unexplained reason declined to unite and heal in the ordinary way. He had no notes at hand but was inclined to believe it was more likely to occur in rather weak or debilitated, and in fat, anemic individuals. He had no explanation of it, and simply noted the fact with interest in passing.

Pool has noticed this condition particularly in epigastric incisions for carcinoma of the stomach, but he has also observed that it happened in other types of cases. He thinks the principal reason for this delayed union in upper abdominal wounds is due to the fact that in the upper abdomen, the peritoneum, transversalis fascia and expansion inward of the transversalis muscle are practically one structure, as far as the suture of the wound is concerned. The transversalis is rigid and its fibres are transverse, so that sutures readily tear out, and at the same time tear out of the underlying peritoneum. The transversalis being attached to the costal cartilages draws the edges of the wound apart in every respiratory act, and that this line of suture in epigastric wounds, especially near the mid line, thus frequently gives way. Intra-abdominal pressure can then very readily separate the overlying sutures, especially in tissues of which the vitality is diminished.

Willard Bartlett writes, "I have had a number of such cases and the only explanation I could ever offer was that they were due to the cross pull exerted by the lower segments of the chest wall, in connection with deep respiration, vomiting, coughing, straining at stool or urination."

J. E. Thompson reports that he has had three cases, in which the wound, apparently non-infected, opened up widely of its own accord after the stitches were removed. One case was a gastro-enterostomy, one an exploration, and the third an exploration with drainage of the gall bladder through a stab wound. In all

three cases the wound healed without difficulty after a secondary suture, which was done under local anesthesia.

He states, "for many years I have been careful not to make a wound in the middle through the linea alba. In cases where this has been necessary I made a routine practice of overlapping the edges of the linea alba and fastening them together by mattress stitches. Since adopting this procedure I have had no catastrophies."

A. J. Ochsner remarks that he has had several cases of delayed union in non-infected wounds above the umbilicus in patients suffering from severe cachexia due to carcinoma. He does not recall the number of cases he has seen.

Crile has occasionally seen cases of delayed union in non-infected wounds above the umbilicus. In his experience they have usually been associated with anemic or starved patients. The reason for the occurrence in patients of this type he thinks is due to the poor blood supply in this region, even under normal conditions.

Watts writes that he is of the impression that some years ago they had trouble with this condition, but for a long time he does not recall any such cases, possibly due to improved closure.

Judd does not recall a single case of delayed union in a non-infected wound above the umbilicus. He has seen a number of hernias develop in this region, but he thinks that they were due to an atrophy of the rectus muscle, possibly as a result of interference with the nerve supply at the time of operation.

Clark and Willis write that they have not given the subject any special consideration and are unable to make any explanation as to its cause. McGuire has seen no difference in the union of incisions above the umbilicus than in those below, except in cases of drainage or infection.

Haggard and Royster can not recall any such cases in their practice.

O. Madelung has written an exhaustive article on "Post-operative Prolapses of the Abdominal Contents," and gives a detailed report of all cases reported up to 1905. But in this article there is no suggestion that delayed union is peculiarly prone to appear in epigastric wounds: on the contrary, this author explains that this accident is more likely to occur in wounds below the umbilicus. However, when one stops to think that much of Madelung's material came from an early period in abdominal surgery, when the great majority of the so-called abdominal operations were really done for pelvic disease, one is led to disagree with his conclusions. Of Madelung's 156 collected cases, 82 were below the umbilicus. Certainly, in view of the preponderance of sub-umbilical incisions that obtained at the time this material was furnished, the conclusion that lack of union or imperfect union is more apt to occur in wounds below than in wounds above the umbilicus, is not warranted. On the contrary, the figures go to prove that this accident is more likely to occur in wounds above the umbilicus.

Emil Reis, of Chicago, and R. R. Smith, of Grand Rapids, have both written on the general subject of separation of abdominal wounds, but both of these authors follow the same lines as does Madelung, with the exception that Reis considers only aseptic wounds which have been closed completely. Many others have reported cases of separation of abdominal wounds in general, but none, so far as I know, give any facts of importance not given in the articles referred to. While the evidence is not unanimous, yet it is certainly so nearly so as to leave no doubt but that the conclusion is warranted that epigastric wounds are peculiarly prone to delayed or imperfect union. In this connection, it should be remembered that in a given case the reparative process may be usually slow, and yet no ill effects may follow, provided the suture material holds until the union is perfect; and in another case in which the reparative process is equally good, a hernia or separation of the wound with extrusion of viscera may occur because of absorption of the sutures before the union had been completed.

As to the causes of delayed union in epigastric wounds, it is obvious of course that among them will be found those which are common to all wounds, such as strangulation of tissues from the sutures being tied too tightly, infection, undue tension, and systemic debility. However, if it is admitted that epigastric wounds are peculiarly prone to delayed union, then it must follow that there are causes for this peculiarity. Leaving out of consideration the causes which are common to all wounds, we may sum up the theoretical and known

causes of delayed union more or less peculiar to epigastric wounds as follows:

1. A trophic, or neuro-vascular disturbance, associated with sensory nerve disturbance in the stomach zone of Head.—(Morris' theory).

2. Soiling of the wound with stomach or bowel contents.

3. Tension of the abdominal walls. This tension is of two kinds: constant, from the lateral pull of the abdominal muscles; and intermittent, due to the action of the diaphragm.

4. The anatomy of the abdominal wall peculiar to the epigastric region.

5. Lack of blood supply.

6. Thinness of the abdominal walls.

The treatment naturally resolves itself into the preventive and the curative. The former is of much the greater importance, and it is of this branch of treatment I will speak here. We know of nothing which will in any way modify the neurovascular conditions which may interfere with union, aside perhaps from attention to the general condition of the patient. The deleterious effects of soiling the margins of the wounds with gastric or intestinal secretions should be avoided by protecting the wounds with towels or pads. By making the incision through one of the recti muscles, instead of through the mid line, we may reduce to a minimum the bad effects of tension, anemia, thinness of the wound margins, and the anatomy of the abdominal wall peculiar to this region. However, as has been pointed out by Reis, and demonstrated clinically in many cases, all of these precautions may fail in securing prompt and satisfactory union. We should not lose sight of the fact that no matter how much delayed the union is, it is only necessary to keep the parts in apposition until union has been completed to avoid ulterior results. This means that non-absorbent, non-irritating suture material should be used and allowed to remain until the operator is satisfied that the union is secure. I feel that one is courting serious trouble to remove the non-absorbable sutures under twelve days or two weeks. It means also that in the after treatment all reasonable measures should be used to reduce to a minimum the tension, both continuous and intermittent. Coughing, vomiting, tympany, movements of the patient, etc., all tend to increase the pull on the suture line, thus inducing separation of the coapted surfaces; even though the sutures hold, it is unnecessary to go into detail but it is well perhaps to mention the fact that these deleterious influences can be materially mitigated by the proper selection and giving of the anesthetic, attention to the diet, use of the stomach tube and enemas, giving of sedatives and restricting the patient's movements. In this connection I should like to venture the prophecy that the fashion of getting the patient up early, and the early removal of stitches, will manifest itself, either to us or to our successors, in a harvest of hernias.

Many cases of separation of the wound are reported in the literature wherein the stitches had been removed at the end of a week or ten days, and the patient allowed to get up and exert himself in some such way as to bring unusual strain on the parts. In these reported cases the accident was followed by extrusion of the viscera and immediate repair of the injury, but if the separation, starting at the same time and under the same circumstances, should be incomplete and progress gradually, the patient will later on come to the surgeon with a hernia. For, as has been thoroughly proven by Reis, the separation, when it occurs, always commences in the deeper layers and may be confined to them. An audible snapping occurring in the wound during coughing, sneezing, or other exertion, should lead to a careful examination of the wound and resuturing, if necessary. For the past four or five years we have used silkwormgut through and through sutures in all epigastric wounds, and none of the stitches are removed under fourteen days.

Bibliography.

1. Morris, Robt. T., The Journal of A. M. A., June 17, 1922, Vol. 56, No. 24, page 1798.
2. Porter, Miles, The American Journal of Obstetrics, 1914, Vol. 70, page 796.
3. Erdmann, John F.; Horsley, J. S.; Finney, J. M. T.; Pool, E. H.; Bartlett, Willard; Thompson, J. E.; Ochsner, A. J.; Crile, G. W.; Watts, Stephen; Judd, E. S.; Clark, John G.; Willis, A. M.; McGuire, Stuart; Haggard, W. D., and Royster, H. A.—Personal Communications.
4. Madelung, O., Archv. Klin. Chir., 1905, Vol. 50.
5. Ries, Emil, American Journal of Obstetrics, 1909, page 569.
6. Smith, R. R., International Journal of Surgery, 1910, Vol. 23, page 65.

Discussion.

Dr. R. B. James, Danville: I have got a patient, an old man, upon whom we operated for stricture. We leveled the stricture, but it returned and we cut it again and let out the pus. After that there was no more pus, but the wounds did not heal. I

gave the patient potassium and mercury, and the wound eventually healed.

Dr. Arthur S. Brinkley, (closing): Dr. James' patient must have had some specific trouble or perhaps diabetes.

I recall a case in one of my wards while serving as an interne in a New York hospital. If I remember correctly, this case was an emergency with a mid line incision below the umbilicus. An examination of the urine the next day showed a marked amount of sugar. On the third or fourth day beginning gangrene was noticed, which spread rapidly on either side of the wound. About four inches of the entire abdominal wall sloughed out. When the wound was fairly clean it was resutured with large silver wire sutures, but it immediately broke down again. She went home, and the last time I heard from her was eight months later; the wound then showed no evidence of healing. I don't recall why this case of advanced diabetes was not checked up before operation, but it seemed to slip by, probably because the surgeon did not wait for a urinalysis before operation.

KIDNEY ABSCESS AND PYONEPHROSIS: REVIEW OF CASES.*

By JOHN H. NEFF, M. D., University, Va.

Kidney abscess and pyonephrosis readily lend themselves to a joint clinical review. Both conditions have infection as the prime cause, both result in advanced renal destruction and both usually require nephrectomy for cure. This report is mainly an analysis of the symptomatology and physical findings in a small operative series, nine cases of kidney abscess and twenty-three case of pyonephrosis. The lesion in each instance was unilateral and non-tuberculous.

Kidney Abscess. Nine cases. The majority of patients were referred without a definite diagnosis. It is instructive, however, that in one the diagnosis has been beginning pneumonia, in another typhoid fever. This failure of preadmission diagnosis is mentioned merely to emphasize the usual absence in these cases of any typical clinical picture. The septic state, in greater or less degree, is, of course, common to all such cases, but evidence to convict the kidney with anything like probable certainty is not customarily obvious. The only features uniformly observed in our series have been pain, tenderness, and temperature.

Pain was never recorded as severe, usually as dull and constant. Most often it has been deep seated in the loin; once diffused over the lower chest, once localized entirely in the so-called gall-bladder region. Tenderness in the costo-vertebral angle was noted eight times. This varied from exquisite sensitiveness to the slightest discomfort upon firm pressure. In one instance, there was no posterior tenderness whatsoever. The temperature was of the septic type and the maximum in the respective cases was from 102° to 105°.

Symptoms had been present three weeks, on the average, before admission, with the extremes five and seventy days. None of our cases presented the fulminant type of renal infection which demands very early recognition to prevent a rapidly fatal outcome. In about half of our cases the onset was quite abrupt, in the others the symptoms developed more slowly.

Four patients had had recurrent chills, and nausea and vomiting were prominent complaints in three. Bladder irritation, other than that commonly seen with a highly concentrated urine, was notable for its absence in all patients save two. One of these was seven months pregnant but with a clean bladder, while the other had a quite marked cystitis probably secondary to the rupture of an abscess into the kidney pelvis.

Six of the nine cases gave a history of factors bearing, no doubt, a more or less direct etiological relation to the renal disease. A large boil preceded by ten days the appearance of kidney symptoms in one case, in another an extensive foot infection two weeks before seemed the causative antecedent. A third patient gave a history of a pleurisy on the opposite side two weeks prior to pain in the flank. Two patients were women six to seven months pregnant and it is possible there was some consequent renal impairment increasing susceptibility to a blood borne infection. The sixth case had been delivered four weeks before the onset of pain.

Six of the cases were females, three males, with the ages varying from eight to forty-five. The right kidney was involved eight times, the left once.

Either perinephritic induration or a palpable enlargement of the kidney was found six times. Most cases had a rather marked secondary anemia upon admission. The leucocyte count varied between nine and twenty-five thousand.

The X-ray examination in a few cases showed a definite increase in the kidney

---

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, 1922.

shadow, but in the main was of negative value. The few pyelograms which were made demonstrated pelves within the limits of normal as to contour and size.

Seven of the nine cases were cystoscoped. In only one case was the bladder inflamed and this was the only instance where pus was found in the urine from the involved kidney. Another patient with an originally negative urine, abruptly showed much pus and many staphylococci from the diseased side, the sudden change due to the rupture of an abscess into the pelvis as demonstrated at operation.

Ureteral catheterization was most strikingly helpful in making possible the differential estimation of the phenolsulphonephthalein output from the two sides after intravenous injection. Where this test was utilized the alteration of quantitative excretion corresponded quite accurately with the extent of kidney damage. For example, one patient with a pronounced febrile reaction but with few localizing signs, showed the merest trace of the dye from the right side during fifteen minutes, while the opposite kidney put out fifteen per cent. The right kidney was found upon removal to be riddled with countless small abscesses. On the other hand, in another case the normal 'phthalein output was reduced to a little less than one-half and the kidney here proved to have only a solitary abscess of moderate size.

For the whole series the preoperative diagnosis was correctly made seven times. One case was explored the day of admission without the usual study. The remaining case was mistakenly diagnosed empyema of the gallbladder. This error had for its basis a history of pain having begun under the right scapula and breast, the palpation of a rounded tender mass just below the edge of a low liver and the absence of either tenderness or a mass posteriorly. A routine cystoscopic examination gave negative findings, but, to our later chagrin, a preconceived diagnosis led to the omission of a functional test. Certainty of diagnosis lay in the estimation of 'phthalein excretion and the instance serves to stress the importance of functional study whenever there is any possibility of renal abscess.

A lumbar nephrectomy was done in eight of the nine cases. In the other case, an abscess about an inch in diameter and just beneath the capsule was found near the upper pole. In spite of extensive oedema of the perirenal fat, the remainder of the kidney seemed normal. The 'phthalein output for fifteen minutes had previously been found to be six per cent. With considerable trepidation, the grossly involved portion of the kidney was removed and the wound later Dakinized. The patient made a good recovery and reports that there has been no trouble in the two years since operation.

From the viewpoint of technique, the subcapsular method of performing a nephrectomy has frequently proven most helpful, particularly in the avoidance of possible damage to adjacent structures that could not be recognized because of the extensive perirenal induration.

Six of the removed kidneys were either studded throughout with innumerable small abscesses or else were practically destroyed by several large abscesses. Two specimens, however, showed solitary abscesses of relatively small size involving one or the other pole while the remainder of the kidney presented no other infarcts on gross section. It is quite possible that in these two instances a partial nephrectomy might well have preserved kidneys of diminished but quite useful functional value. In the presence of a demonstrated abscess, however, the decision to do anything short of a nephrectomy is a difficult one to make, particularly if one thinks forward to a possible secondary nephrectomy under trying circumstances.

Recovery was uneventful in these nine cases save for a temporary colonic fistula in one instance. The average stay in the hospital after operation was thirty-seven days.

Pyonephrosis. Twenty-three cases. The outstanding feature for this group has been the long duration of symptoms before admission to the hospital. The average period has been eight years, the upper extreme twenty-three years, and only three cases of the series had had symptoms for less than one year. The symptomatology much more frequently suggested at once a renal lesion, of course, than with the abscess cases and the urine in every instance was pus laden. Yet, one case had been diagnosed as malaria, another as typhoid fever.

The most constant complaint has been re-

current pain in the kidney region, front and back, usually with chills, always with temperature. In about a third of the cases, the pain has been very severe and with the customary radiation of text book renal colic. A few patients gave a history of very slight pain and little or no temperature. Marked bladder irritation was recorded for only one-half the group, while a goodly number denied frequency or dysuria. On the other hand, two patients had for their only complaint extreme frequency and urgency of urination of long standing.

There was neither tenderness in the renal region nor could the kidney be felt in six cases. The only abdominal sign present in one-half the cases was greater or less local tenderness. A palpably enlarged and tender kidney was made out in six instances. A renal fistula was present in two cases, a ureteral fitula in another—all dating back to previous operations.

X-ray examination demonstrated stones in the kidney or ureter, or both, in eleven of the twenty-three cases and for a small percentage visualized quite clearly an enlarged kidney.

The youngest patient was twenty-three, the oldest fifty-three, the lesion was on the right side nine times, on the left fourteen. Twelve cases were in men, eleven in women.

Cystoscopy was performed in twenty-one of the twenty-three cases. In only two cases was there an extensive ulcerative cystitis. The inflammatory bladder changes on the whole were surprisingly slight in view of the prolonged outpouring of purulent urine from above. A rather mild basal cystitis with more intense injection and oedema about the ureteral orifice corresponding to the involved kidney was the usual picture. Most times a glimpse at the ureteral orifices made the diagnosis, a clear sparkling efflux on the one side, the intermittent emission of a solid pus strand on the other. Pus in the urine from the uninvolved kidney was found only once, in that instance four to six cells to the high power field in the centrifugalized sediment.

Frequently where ureteral meatoscopy had indicated a worthless kidney on the one side, the two-hour bladder collection of 'phthalein was accepted as representing the output from the non-infected side. The dye, so recovered, varied from fifteen per cent. to sixty-five per cent., the average was thirty-nine per cent. In the cases where the differential estimation was done by ureteral-catheterization after intravenous injection, the average fifteen minute collection from the good kidney was twenty per cent., seven and one-half per cent. to thirty per cent., from the pyonephrotic kidney, a trace too faint for reading.

Where pyelograms were made, the pelvic deformity usually appeared as one of two types. One form was large, sacular dilatation with rounded, blunted calyces, the hydronephrotic picture, the other was that of disintegration and moderate dilatation, little or no resemblance to the normal contour remaining.

The original kidney lesion in most of these cases could not be determined with certainty. It seemed fairly clear that some had started as a pyelonephritis, others as a kidney abscess, in still others that there had been primarily a stone or other form of obstruction with subsequent infection. Seven of the twenty-three cases had had for two or more years at the outset recurrent attacks of renal colic without chills or temperature and the operative specimens in some instances obviously indicated a primary hydronephrosis and secondary infection. Earlier surgical interference in such cases might well have relieved symptoms without loss of the kidney. Calculi were present in eleven cases, varying from a single giant calculus to numerous small stones in the kidney or ureter. We are unable to say how many of these stones were primary and how many secondary. One patient was four months pregnant at the first onset of symptoms, another two months pregnant, two had been delivered shortly prior to their first kidney symptoms.

The preoperative diagnosis in this series was pyonephrosis twenty-one times, multiple renal calculi once, and cystic tumor of the kidney once. The latter case is of sufficient interest to warrant recording in brief detail.

For a month before admission, this patient had had a constant "drawing sensation" in the epigastrium and upper right abdomen, associated with irregular nausea and vomiting, and probably with a very low grade temperature. He lost weight and strength rather rapidly but remained at work most of the time. A large right sided mass was first found by his

physician and upon admission this obviously fluctuant, rather fixed mass reached below the level of the umbilicus and well around in the flank. Coincident with the onset of this illness some frequency of urination developed and the urine was often cloudy. Previous urinary disturbance was denied. Upon admission, there was a frankly purulent urethral discharge and many gonococci were demonstrated in smears. For this reason cystoscopy was omitted. At operation the condition proved to be a tremendous pyonephrosis and gonococci and no other bacteria were shown by smears and cultures from the contained pus.

A nephrectomy without preliminary drainage was done in all cases. The operative specimens were usually mere pus shells. Where much kidney tissue remained, this was sclerotic and in sections showed diffuse inflammation and often microscopic abscesses.

There was one death in the series. This fatality was directly attributable to undue hemorrhage during operation.

Conclusions.

1. Tenderness or pain in the kidney region, associated with temperature and without other evidence of kidney infection, demand complete urological study. In this study the estimation of renal function should always be included.

2. An ocasional kidney abscess may be successfully handled by a partial nephectomy or drainage.

3. A pus laden urine may be practically the only clinical evidence of pyonephrosis.

4. The loss of many kidneys could be avoided by earlier surgical attention to obstructing conditions in the pelvis or ureter.

Discussion.

Dr. Julian Rawls, Norfolk: Some little time ago I saw a case which gave the history of having had for several years attacks of pain in the region of the right kidney accompanied by the development of a mass in that location. I had occasion to cystoscope him twice following a subsidence of the acute attack and the disappearance of the mass. In each instance I had no difficulty in getting a catheter all the way to the kidney on that side and each time that kidney was functionally almost as good as the left kidney. Dr. Neff saw this man in an acute attack and was unable to get the catheter to the kidney. He then returned to Norfolk and I made an unsuccessful attempt to catheterize that kidney.

Later, he went back to Dr. Neff who succeeded in obtaining a pyelogram. I think he said that the picture showed some hydronephrosis. The kidney function was practically nil.

This man had about made up his mind to have a nephrectomy done when he was persuaded to go to Baltimore to see Dr. Geraghty. It happend that Geraghty saw him after the acute symptoms had entirely subsided and there had been some return of function to the damaged kidney. He advised against nephrectomy and performed some type of reconstruction operation with a suspension. The man has had no further trouble, is in good health and has been gaining in weight.

In some of these cases the kidney often goes dead but eventually a good deal of its function returns after the obstruction has been relieved.

Dr. Arthur S. Brinkley, Richmond: About six months ago we had a case of perinephritic abscess, brought into the hospital acutely ill, giving a history of having been sick four or five days. There was a mass under the right costal arch about the size of a small orange. The patient's respiration was bad, and he showed all of the symptoms of an acute infectious condition. His pulse was 160. with a temperature of 103. Abdomen was rigid and distended.

Under ether anesthesia, a right lumbar incision was made, and with the index finger the abscessed cavity was ruptured. The abscess extended toward the upper pole of the kidney. Three or four ounces of a dark, grumous looking pus was liberated. It had the appearance of a streptococcic infection. Examination showed a hemolytic streptococcic infection.

The patient was desperately ill for ten days, requiring gastric lavage every four hours for twelve days, and active supportive treatment. He recovered, and today is in good condition.

I would like to have Dr. Neff discuss any such cases he may have had.

Dr. John H. Neff, University (closing): The man to whom Dr. Rawls referred had a large mass in the upper right abdomen when we first saw him. We could not get the ureteral cathter into the pelvis on this side and hence obtained no flow. The 'phthalein output from the left kidney was twenty-two per cent. in fifteen minutes. Some months later we demonstrated a large hydronephrosis on the right side, but there was practically no 'phthalein recovered from the kidney, while the output on the left side was again twenty-two per cent. We advised a right nephectomy.

This patient later consulted Dr. Geraghty who, on the basis of a rather good urea output from the right kidney, advised a plastic operation with preservation of the kidney and this was done.

Dr. Brinkley's case was very interesting. We have had no experience with this type of infection and hence I feel unable to discuss his case.

PROSTATECTOMY, WITH SPECIAL REFERENCE TO THE PERINEAL ROUTE.*

By J. SHELTON HORSLEY, M. D., Richmond, Va.

The best method of relieving the effects of an hypertrophied prostate cannot yet be said to be strictly standardized, but the situation is nothing like so chaotic as it was ten years ago. The chief cause for the improvement in the

*Read at the fifty-third annual meeting of the Medical Society of Virginia, Norfolk, Virginia, October 31—November 3, 1922.

treatment of prostatic patients has been a more accurate study of the renal function. This has been the outcome of the combined efforts of the physiologist, the biochemist and the clinician. Phenolsulphonephthalein has added greatly to the methods of determining renal function, but perhaps the most accurate test is the determination of the blood urea nitrogen. A practical and very reliable method is a modified Mosenthal test for the elimination of salt by the kidneys. This latter test requires no special apparatus and can be employed by any practitioner who has the simplest laboratory outfit for examining urine. (Dodson and Ashworth, "The Diagnostic Value of Analysis of the Urine," *Va. Med. Monthly*, April, 1922).

Prostatic obstruction that causes a constant residual urine of three or four ounces is almost certain sooner or later to give serious trouble, even though the early symptoms of such slight obstruction may be very mild. The back pressure upon the kidneys, and the infection that often follows the stasis add to the gravity of the situation. The sudden relief of this pressure is sometimes serious, so that patients who have had complete retention or a marked amount of residual urine should be treated cautiously in the emptying of the bladder, in order that the kidneys may gradually resume normal work without the handicap of the back pressure to which they have become accustomed. The methods for accomplishing this by catheterizing part of the urine or, better still, by emptying the bladder and introducing boric acid solution, are well known. After a few days of such treatment it is safe to empty the bladder completely.

In the prostatic patient whose bladder has not been infected, the results of any operation or of continuous drainage are often complicated by an infection that is more serious than in the patient whose bladder has been infected. For this reason, when the urine is perfectly clear, great care should be taken to avoid infection and, while the promiscuous use of vaccines is unwise, in these cases a few doses of a general combined vaccine treatment is often helpful before attempting to do any operation upon the bladder.

Since December 1, 1919, when Dr. A. I. Dodson became associated with the work at St. Elizabeth's Hospital as urologist, our management of prostatic cases has been much more satisfactory. He has worked out the method of treatment of patients with hypertrophied prostate before and after prostatectomy. (Dodson, "Prostatectomy, a Report of Cases, with Special Reference to Pre-Operative and Post-Operative Treatment," *Va. Med. Monthly*, Dec., 1922.) During this time, from December 1, 1919, to the present, I have done seventeen prostatectomies. There has been one death, and that was from an error which I believe will not be repeated. This case, an early one in the series, was first drained as usual by suprapublic cystotomy done under local anesthesia. After his condition became satisfactory, which was about two weeks after the drainage operation, I did under ether a suprapubic prostatectomy, enlarging with the finger the former suprapubic opening. The bladder was given the usual treatment of irrigation with boric acid, and then argyrol, just before operation. After removing the prostate, I found that the peritoneum had been torn open in a small place at the upper portion of the wound. This was sutured. The patient developed high fever within the first twenty-four hours, and his temperature reached 105 axillary. He died on the following day after operation. Necropsy showed a small amount of bloody serum in the peritoneal cavity. There was not much local tissue reaction, but there was apparently a virulent rapid peritonitis. Since this experience I have done fewer suprapubic prostatectomies, though I think this route has a very definite place in operations on the prostate gland. When it is necessary to do a suprapubic prostatectomy, I now enlarge the suprapubic drainage opening by an incision down toward the pubis, and mobilize the tissues in this direction so as to prevent them from tearing upward into the peritoneum.

Of the total number of cases, we have done eleven by the suprapubic route (mostly in the first part of this series) and six by the perineal route. Included in this group are two cases in which the prostate was cancerous. In one the cancer was quite extensive, and all of the tissue could not be removed. This patient was operated upon by the suprapubic route. A diagnosis of cancer was not made until the operation was performed. There was a moderate amount of hemorrhage, he was badly shocked, and was transfused by the direct

method a few hours after operation. He made a satisfactory immediate recovery, and three days after the operation radium was applied directly to the wound in the bladder. Sixty milligrams of radium were placed in the bed of the prostate through the bladder and left seventeen hours. The reaction from the radium was exceedingly severe, but this patient, who was operated upon May 26, 1921, has made a satisfactory recovery and is apparently free from any recurrence. His present general condition is excellent.

The other case of cancer was not so extensive. In this patient, too, cancer was not recognized until at operation. The prostate at one point was firm and had infiltrated the capsule around it rather markedly. The prostate was removed, and a frozen section made while the patient was under anesthetic showed cancer. Sixty milligrams of radium were then applied in needles around the capsule of the prostate. This patient also had marked shock, and was transfused four hours after operation. He recovered and, while apparently there is no recurrence of the cancer, there is a considerable degree of incontinence. He can control the urine during the night and while sitting down, but there is very little control while standing or walking. This is the only patient in whom there is any degree of incontinence, and I think it is due not only to the somewhat more extensive operation on account of cancer, but to tissue changes from the direct application of radium. I believe the incontinence will improve.

At present I do most of the prostatectomies through the perineal route, using the technic of H. H. Young. In many of the cases there is some variation of this technic, which is suited to the individual requirements. It is necessary to remove the obstruction in the median portion of the capsule. With the finger within the capsule after the lateral lobes have been enucleated, a growth in this region can be palpated between the prostatic tractor and the finger, the tractor being manipulated so that any possible obstruction can be felt with the finger. The finger is always introduced into the bladder before the tractor is inserted, or after it is removed. This is to insure not only the removal of obstruction, but to be certain that there is no stone.

Our routine procedure now for prostatic patients is, first of all, to ascertain their renal function by phenolsulphonephthalein, and the blood urea nitrogen, in addition to the regular methods of examination of the urine. The amount of retention is measured. If it is very large, the patient's bladder is emptied in stages. Then a suprapubic operation is done under local anesthesia. The opening is made large enough to introduce the finger. In this way the outline of the interior of the bladder and of the prostate, as well as the consistency of the prostate and its general direction of growth, are obtained. We do not feel that it is wise as a rule to cystoscope prostatic patients. Dr. Dodson and I feel that better information may be obtained with less risk to the patient by a suprapubic opening, which is also necessary for drainage.

We have not found that continuous urethral drainage is satisfactory. It is often painful and difficult to maintain, and has a tendency to promote urethritis. After the exploration through the suprapubic cystotomy, a mushroom catheter is inserted, and the bladder wall is sutured snugly around the catheter to make the union watertight. The abdominal wound is partially closed with interrupted sutures of silkwormgut, and a strip of idoform gauze is carried down to the prevesical space. This operation can be done with no pain under local anesthesia, though the exploration of the bladder with the finger, which only requires a short time, gives some discomfort.

Often mild symptoms of uremia develop during the first few days after establishing this drainage. When these symptoms have disappeared, and when the blood urea nitrogen, phenolsulphonephthalein and the general condition of the patient (which also includes the appearance of his tongue) seem to show him to be about normal, prostatectomy is done. If the previous suprapubic exploration has shown that the growth lies chiefly in the bladder, and particularly if it is pedunculated, the suprapubic route is employed. These cases, however, are exceptions. In other instances, especially if we suspect malignancy, the perineal route is followed.

While the perineal route requires a little more time than the suprapubic, there is less likelihood of infection. There is better control of hemorrhage by packing of the cavities from which the prostate is removed, and the patient is, I think, more comfortable. The prostate should be removed as gently as pos-

sible so as to leave a pocket into which gauze can be packed. If the bladder is widely torn, or the tissues are damaged extensively, naturally the risk of the perineal method is greatly increased.

It would be strange not to find a few patients among men of this age who suffer shock from such an operation. It is always wise to have donors matched up for direct transfusion of blood after prostatectomy. In this series we have used post-operative transfusion for shock three times, twice in cancer cases and once in a very large prostate in a man whose condition was none too good, but apparently could not be made better. I think it probable that without transfusion all three of these patients would have died.

Each prostatic patient has to be studied on his own merits. With the careful co-operation of a skilful urologist and a competent surgeon, the mortality should be small, and the morbidity should be very little. By recognizing the necessity for the establishment of a maximum amount of renal function, by doing the operation with as little trauma as possible, by promptly using transfusion, which is almost a specific in shock or hemorrhage, and by selection of the method of operation best suited for each case, the mortality in these prostatic patients can be reduced to its lowest terms.

St. Elizabeth's Hospital.

DISCUSSION.

DR. H. H. TROUT, Roanoke: Am particularly interested in prostatectomies from the standpoint of the operative use of radium. We have had in the last four years, six cases of cancer of the prostate, in which we implanted radium after doing a suprapubic prostatectomy. Our method has been to use a number of small needles spread over a large area so as to obtain the beneficial effects well distributed. Our results with radium have been such as to lead us to hope it would be of great benefit as an adjunct to surgery, in what is, so far, an almost hopeless procedure. One of the six cases is well over a period of three years, one over a period of eighteen months, two for three months and two died before leaving the hospital.

DR. J. H. NEFF, University: In spite of the fact that we do about half of our cases suprapubically, we are rather partial to the perineal prostatectomy. Of late we have been following the technique of Geraghty's modification of Young's operation, and so far have found it very satisfactory. The enucleation by this method is clean and complete and the likelihood of post-operative incontinence is greatly lessened since the membranous urethra is not opened.

Without having the actual figures at hand, I think I can safely say that catheter drainage has been quite satisfactory in the preliminary treatment of 70 to 80% of our cases. A suprapubic cystostomy is usually only done when catheter drainage has been a failure for one reason or another. In our experience suprapubic cystostomy has not been the simple innocuous procedure that the literature sometimes leads one to believe.

DR. J. SHELTON HORSLEY, Richmond (closing): In the seventeen cases here reported, which comprise all of the prostatectomies done in St. Elizabeth's Hospital since association with Dr. Dodson as urologist, eleven of them have been by the suprapubic method, but they were almost entirely in the earlier part of the series. More recently we are using the perineal method, and like it as a rule much better. There is unquestionably room for both methods. I was much interested in hearing what Dr. Neff had to say about the Geraghty method. The only instance in which we have had any trouble from incontinence in patients operated upon by the perineal route was in a case of cancer, in which it was necessary to do a very extensive operation and then to insert radium after the operation. The patient has now a partial incontinence, and can control the urine while sitting or lying, but not while walking about.

Two of these prostatectomies have been cancer cases, and in both instances we have applied radium directly into the wound. At present both patients are apparently free from recurrence.

In using transfusion, I particularly wish to impress the importance of doing the transfusion promptly, and by the direct method. We have had about fifty direct transfusions without any reaction.

SOME FURTHER OBSERVATIONS ON PROSTATECTOMY.*

By ROBERT C. BRYAN, M. D., F. A. C. S., Richmond, Va.

In April, 1921, the writer reported one hundred consecutive prostatectomies, making observations at that time upon the physical state, the character of the urine, cystoscopic examination, the general findings, and entered into detail, by the use of lantern slides, about the process of enucleation of the prostrate gland by the Bentley-Squier intra-urethral method, paying particular attention to the sequences of the operation in combating hemorrhage, shock and postoperative complications.

It was stated in this paper that thirteen cases had the suprapubic cystostomy carried out under novocaine, the extreme disability being such that the patient never came to the ultimate enucleation of the gland. Eleven cases were lost following prostatectomy which were tabulated as follows:

Hypostatic pneumonia	1
Apoplexy (during anesthesia)	1
Acute dilatation of the heart on sitting up	1
Septic endocarditis	1
Infection on removal of Hagner bag	1
Uremia	2
Hemorrhage	3
Anuria	1

*Read by title at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

In consideration of the causes of death we have learned by further experiences to reduce the mortality by even greater precautions, and in the last year there have been twenty-nine prostatectomies, no cases having been lost from hemorrhage, which was the cause of the death in three of our cases last reported.

Previously the average age of the patients was 65, in this series 69; the renal efficiency by the phenolsulphonephthalein method, taken in every instance, has proved to be 23.2%, the lowest 7%, the highest 70%. The case of 7% renal efficiency, operated on for acute retention under novocaine, by persistant proctoclysis and water drinking developed 17% on the date of the operation, the old man making ultimately an uneventful convalescence and going home. The encouragement of water drinking and water absorption either by the bowel or saline intravenously has, we believe, been the means of saving several lives, certainly increasing the renal output to a point which justifies operation.

In three of this series suprapubic cystostomy alone was performed for acute retention, the condition proving to be inoperable carcinoma. In all of these cases the radium needle was used, plunging it deep into the prostatic substance through the suprapubic opening. On an average of 50 mgr. from twelve to fourteen hours was used in each case. The writer has seen no abscess formation or urinary infiltration following the use of this method, but in one instance the replacement fibrosis was of such a dense character that the suprapubic wound ultimately healing required external urethrotomy for severance of the scar tissue about the internal sphincter. This old man, operated upon some sixteen months ago, is apparently in good health and, although a slight suprapubic drainage is still going on, he is able to be about and has no pain.

The blood urea, nitrogen and creatinin has only been done in those cases where the contamination of the urine by the blood was so great that the pthalein test would have been unrecognizable. The writer does not attach the significance to this index of urinary balance that we do to the pthalein test.

Of the three deaths that were sustained in this recent series of prostatectomies one died thirty days following the operation, when the wound had healed; he was up and walking about, but developed a deep cold which rapidly went on to pneumonia and death from cardiac failure in 48 hours. The second case died six weeks following the enucleation from general debility and refusal to take nourishment and drink water, the tissues being so dehydrated that the urinary output was practically nil. The third case was apparently the only one in whom we could probably have avoided death, which occurred the day of the operation. This was an error of surgical judgment. He had been prepared for weeks for the operation by proctoclysis and water drinking, his pthalein raised to justify the procedure, but sufficient care was not given to his heart which, from the strain of nitrous oxide anesthesia, developed acute cardiac dilatation a few hours following the operation. It has been our custom to have the opinion of a medical man to pass upon the character of the heart sounds, although it has been noted that the turbulent skipping heart from urinary retention tends to a restitution by quiet and relief by the suprapubic drainage.

A further analysis of our records indicates that the average time elapsing between the operation under novocaine and the second operation under nitrous oxide was twenty-three days, and the average length of time in the hospital five weeks. Only in a few instances has the suprapubic drainage continued on leaving the hospital, the patients feeling so well they insisted upon returning home to be under the care of their family physicians. It has been noted that those patients, following the removal of the gland, who remain quiet and allow the wound to heal slowly but surely, do the best. Attempting to force its union by moving around, sitting up in bed too soon, or getting up in a chair, throws an unnecessary strain upon the healing tissues which tends to delay the union.

Two cases which may be referred to in particular are those of extreme urinary retention; the one had a residuum of twenty-two ounces. the other thirty-three ounces. Both of these gentlemen, age about 55 years, had been treated for heart trouble and other obscure medical conditions without any apparent betterment. Their improvement in health and strength on the removal of the gland was most gratifying. One of them had a clean bladder, the other two large diverticulae the size of a turkey's

egg for which it was considered unwise to do anything at the time of the prostatectomy. This latter patient has had on two occasions since the operation a pretty sharp hemorrhage which the writer takes to be due entirely to the diverticulae.

One sequence which had not been observed in our former report of cases is cicatrization or thickening of the internal sphincter following the removal of the prostate. This at times has been pronounced, requiring forcible dilatation with the Kohlmann dilator or the use of sounds. Young says:

"Normally the internal sphincter is composed of small non-striated delicate fibres grouped into bundles separated by a thin layer of connective tissue. As the examination is carried closer to the mucous membrane, the muscle structures become smaller and are separated by thicker layers of connective tissue until the submucosa is reached, where there is practically no muscle. Contrasted with this, the contractures show the sphincter to be composed of coarse muscle fibres grouped into large bundles separated by the smallest amount of connective tissue and lying much closer to the mucous membrane."

Chetwood says that there is a chronic inflammation with secondary fibrotic contraction producing sometimes total occlusion with elevation of the opening about the floor of the prostatic urethra, and that the inflammation involves the periurethral glands and is accompanied by round cell infiltration into the tissues between the glands and invades the sphincter muscles. The mucosa becomes hypertrophied and polypoid. It must be realized at this time that the condition of contracture of the neck of the bladder is not always found single-handed, but not infrequently arises with moderate enlargement of the prostate.

All cases of prostatectomy should report within a couple of months for a thorough investigation of the prostatic urethra and the condition of the urine. Evidences of sphincteric cicatrization are noted early in a much-delayed union of the suprapubic wound. Just at present an old man 76, whose prostate was removed in July, still returns at intervals for dilatation of the internal sphincter and irrigation of the bladder.

The writer can hardly emphasize too strongly the importance of a thorough instrumental (sounds and cystoscope) examination of those cases whose ventral wound continues to drain for six to eight weeks following prostatectomy. The urine may become fetid and infected and an ultimate pyelitis or surgical kidney is in order. We cannot disregard the stenosing, cicatricial internal sphicnter, which for years held apart by the enlarging prostate has now no intervention to prevent it contracting down to a degree which demands relief by gradual dilatation. This treatment should not be instituted until there has been a thorough healing of the prostatic urethra, which on the average takes about one month.

In this, our second series of cases, that distressing complication, epididymitis following prostatectomy, has not been noted. This is not due to any greater preoperative care than formerly, but following the operation the scrotum is kept elevated and the patient is encouraged to use a suspensory bandage on leaving the hospital.

In conclusion, the writer would call particular attention to prolonged bladder drainage, copious water drinking and persistent protoclysis as the most desirable adjuncts to a happy outcome of an operation, which at best has to deal with the elderly and must, therefore, be attended with considerable surgical risk.

Grace Hospital.

MULTIPLE MYELOMA WITH REPORT OF THE CASE.*

By JULIAN L. RAWLS, M. D., Norfolk, Va.

Multiple myeloma is a condition of sufficient rarity to justify the reporting of all cases, in order that the accumulated data may be of some benefit in arriving at a conclusion as to its etiology.

Ewing's definition is, that "Multiple myeloma is a specific malignant tumor of the bone marrow arising probably from a single cell type and characterized chiefly by multiple foci of origin, a uniform and specific structure composed of plasma cells or their derivatives, rare metastasis, an albuminuria, and a fatal termination." He further states, that this description is subject to extensive modification.

The text books on surgery have used indiscriminately the term myeloma for what we ordinarily understand as the benign giant cell sarcoma and the condition which we are discussing in this case; for instance, Warbasse

*Read before the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31-November 3, 1922.

states that a myeloma is a benign tumor of the red bone marrow treated by excision and curettement or by curettement alone. Keen's Surgery, Vol. I., p. 148, states that myeloma are non-malignant tumors of red bone marrow rarely seen after the twenty-fifth year and if removed before the tumor tissue perforates the capsule, they do not recur. In Vol. II., p. 71, under the same name, it is referred to as a rare malignant tumor of the bone.

In Vol. III., p. 58, they refer to the condition under the term myeloma, Kahler's disease, as a condition which in the present state of our knowledge is absolutely incurable. So it would seem that even the same authority uses the term indiscriminately.

The condition is of unknown etiology, it is characterized by the appearance in one or more bones of a peculiar type of tumor growth, which shows no tendency to new bone formation and which rarely metastisizes in lungs, liver or other internal organs.

The sites of predilection are the sternum, ribs and skull, more rarely in long bones and in the vertebral column.

It is usually accompanied by Bence-Jones proteids in the urine—a peculiar type of albumin which appears in the urine on heating and disappears when brought to 80 degrees centigrade, and reappears on cooling.

Wattes, of the Mayo Clinic, says that Bence-Jones proteinuria is significant from a diagnostic and prognostic standpoint, since it occurs in 80% of all cases and is usually followed by death within two years.

Nichols, in a recent article on "The Roentgen Diagnosis in Tumors of Long Bones," refers to myeloma as a true bone tumor, medullary in origin, showing an elevation of the cortex, erosion and protrusion of the growth. He states that the X-ray examination should first give the appearance of expansion and later of destruction to the cortex.

With this very brief description I wish to report the history of a case of myeloma which came under our observation.

Avel Copeland, colored, female, aged 37 years, married twenty-one years.

Family History. Father dead, cause unknown. Mother died at forty-five of pulmonary tuberculosis. One brother twenty-five years of age, good health. No sisters.

Past History. Pertussis and measles as a child. Malaria thirteen years ago; was sick for over two months. No other illness, no accidents, no operation. Menses at fourteen years; irregular until her marriage, no pain, lasted three or four days. Married at seventeen years. Ten full term pregnancies. No miscarriages. Last pregnancy terminated in April, 1921, and the baby developed hydrocephalus after birth and lived three months. Menses are regular at the present time and without pain. She has no leucorrhoea at present time but did have a slight discharge two weeks ago.

Present Complaint. In January, 1921, she had a pain in the left side of her back, but it was not severe enough to cause her to go to bed. This continued until after her baby was born in April, then it disappeared for two weeks, after which it returned and she has had some discomfort ever since. It became worse about three months ago and she went to bed for a month. She had some vomiting but none before or since. She was up for a month and then had to go back to bed. She has been in bed ever since. She states that she has a discomfort (or a "fluttering") in her abdomen. She has had no edema of her limbs since her confinement.

She has had no shortness of breath or headaches. She had some disturbance of vision after her last delivery in April but that has cleared up. She claims that she has had some pain and some disturbance in her right leg in walking since her illness in September. This pain is worse at night and once or twice when walking the leg has given way.

Physical Examination. *Head* negative. Pupils react to light and distance. Ocular movements normal. Teeth in good condition. Tongue coated but moist. *Neck* negative. Thyroid not enlarged. No adenopathy. *Chest* negative. Mammary glands normal. Heart and lungs normal. Blood pressure 130/80.

Abdomen. No distention; no marked rigidity. There is a sense of resistance and tenderness around the left kidney region but the kidney is not distinctly palpable. Right kidney negative. Liver is not enlarged. Both kidney areas are somewhat tender on first percussion over back. Spine normal. *Limbs* are negative. No varicosities or ulcers. No edema. No nodules felt. The left patella reflex is more active than the right. There are no abnormal reflexes.

Pelvic examination is negative.

Urinalysis. December 26, 1921. Catheterized specimen. Amber; clear; acid; 1010; albumen trace; sugar none.

Microscopic. Hyalin and granular casts; small amount of epithelium; large number of pus cells; few blood cells.

Cystoscopic. December 27, 1921. Bladder shows no marked congestion. No intolerance to fluids. Both ureteral orifices are normal in appearance and catheterize easily. No stricture. Both kidneys are functionating normally. Phthalein appeared through both kidneys in seven minutes.

Right kidney specimen shows a few epithelial cells; left kidney specimen—a large amount of epithelium, a small amount of pus, and a few pus casts and granular casts.

X-ray of her genito-urinary tract was negative. A Wassermann made December 31st, 1921, was negative.

Diagnosis. Left pyelo-nephritis.

On January 5th, while still in the hospital, the patient sustained a pathological fracture in the upper third of the right femur, while her position was being adjusted in bed. She had not borne her weight on that limb in over three weeks. The x-ray showed a destruction of bone at this point with an internal rotation of the lower fragment with a shell completely broken off from the outer surface. There was no expansion of the thin cortical shell. There was apparently no invasion of the soft tissues.

On January 7th, Bence-Jones bodies were present in the urine. Her blood picture at that time was Hg. 77%; R. B. C. 4,250,000; W. B. C. 13,200; Small Lymph. 13%; Large Lymph. 2%; Mono. 5%; Trans. 5%; Poly. N. 74%; Baso. 1%.

X-ray of her sternum and ribs was negative. Also a pyelogram of her left kidney showed no evidence of irregularity. The plates were sent to Dr. Bloodgood with a request for an opinion on the lesion.

Dr. Bloodgood came to Norfolk in February and saw the case. He suggested the application of a plaster cast supportive treatment and repeated X-ray plates to determine the condition. He stated that if it were myeloma the condition was hopeless; that if it were medullary sarcoma she probably would not survive a hip joint amputation; and if it were a bone cyst there was no need for precipitate action. We made repeated attempts to check up the finding of the Bence-Jones proteid, but the laboratory technician reported that there was so much of the ordinary albumin in the specimen that it was impossible for her to detect it.

Shortly after this patient developed a facial erysipelas and was transferred to the City contagious hospital for treatment. Recalling the action of Coley serum and the treatment of malignant growths with streptococcic toxins, we were in hope the erysipelas might have some beneficial action on the growth.

She was returned to the Norfolk Protestant hospital still in a cast, and an X-ray plate taken on February 22nd, showed a further extension of the disease process up the shaft.

In March her husband died in another hospital, of septic pericarditis, and on her urgent request she was sent home in the cast in order to be with her little children. This was several miles in the country and I placed her under the care of a colored physician who promised to keep me informed of her condition.

I saw her by accident in the latter part of April and found her acutely ill. There had been a marked emaciation, she had a high fever and rapid pulse and was coughing almost constantly. She died the following day before I could have her readmitted to the hospital, and an autopsy showed the abdomen entirely free of any pathology. Neither kidney showed any gross pathology. The liver was slightly enlarged but contained no nodules. The heart was normal. Both lungs showed a hyperstatic congestion and there was a hard nodule in the posterior portion of the right lung which I took to be a metastasis. The entire tumor of the femur and a section of the lung were sent to Dr. Bloodgood's laboratory and he very kindly sent me the following report: The section from the lung shows no metastasis but sections from the tumor all show groups of cells found in multiple myeloma, plasma cells, various forms of leucocytes, marrow cells and nucleated reds.

I think, then, we are safe in considering this a case of multiple myeloma, although but one bone showed evidence of the growth at the time of her death and that a long bone.

142 *Main Street.*

AN UNUSUAL CASE OF MASTOIDITIS.

Operation and Recovery.*

By THOS. E. HUGHES, M. D., Richmond, Va.

Patient, R. C. W. Jr., a school boy, thirteen years old, somewhat frail looking, was seen first during present illness, September 7, 1922.

Complaint.—Swelling behind right ear.

F. H.—Unimportant. No tuberculosis; no syphilis: no ear trouble.

P. H.—No illness except similar swelling over same mastoid in February, 1921. At this time several members of the family had influenza, which, however, this patient escaped. He developed slight pain in the right ear and several days later a swelling appeared over mastoid. The patient thinks there was a slight discharge from the canal, but not enough for irrigation. There was no acute pain in the ear nor in the mastoid. Swelling lasted for several weeks, but gradually subsided without operation. As I did not see the patient during this attack, I cannot give you the condition of the ear drum; but Dr. Talley's history and X-ray findings of the case are as follows:

"February 15, 1921, patient has had some swelling over the mastoid region for the past week, which has gradually increased, has slight pain, very little tenderness on pressure. No discharge from the ear. Had some temperature, as high as 103 F. Left mastoid of pneumatic type development fairly good for patient of this age. Right mastoid shows evidence of cell destruction in lower portion with general decrease in density."

Conclusion: "The findings indicate a considerable amount of disease in the right mastoid."

X-ray Report No. 2—February 21, 1921, shows:

"No evidence of any increase in the changes reported in the right mastoid are observed at this time. The X-ray appearance is essentially the same as before."

Conclusions: "The findings indicate that no increase in the process has taken place. A subsiding process would not necessarily give an alteration in the appearance of the plates. Therefore, it is perfectly possible that the conditions may be improving."

Patient has been quite well since this attack, except when tonsils and adenoids were removed, July, 1921.

P. I. Patient was seen September 7, 1922, and said that swelling behind the ear was first noticed the night before. There had been slight discomfort behind the ear for several weeks, but not sufficient to make him complain of it to his family. No pain in the ear and no discharge at any time from the middle ear. No furunculosis. No infection in the nose, throat nor sinuses.

Examination revealed swelling over the mastoid tip, which extended slightly behind and below; some tenderness over tip, but none over mastoid antrum; no swelling about the auricle nor in the external auditory canal. The membrana tympani was normal in appearance except for very slight injection in Shrapnell's membrane. No bulging; light reflex present. The appearance of the drum did not change during the course of the disease. The hearing was only slightly impaired. Weber lateralized to the right. The patient was seen daily and swelling gradually increased until operation on the 13th. Temperature ranged from 98 4/5 F. to 100 3/5 F. No pain at any time and patient felt well. Dr. Budd's report shows blood culture negative; polynuclears 60 per cent; lymphocytes 37½; eosinophiles 1 per cent, and basophile 2 per cent.

X-ray Report No. 3—September 11, 1922, shows: 'Left mastoid pneumatic in type. Mastoid has normal appearance.

"Right mastoid shows sclerosis in anterior portion. This sclerosis is greater than observed at previous examination (see reports of previous examination). As reported previously, there is little or no cell formation throughout the whole bone; the cells which are present having a thickened and clouded appearance. There is a certain amount of rarefaction at the tip.

Conclusions: "The findings indicate that the old disease in the mastoid has undergone certain sclerotic changes, but this sclerosis is not completed and it is thought from the appearance of the plate that active changes are present."

Operative Findings: Abscess cavity (subperiosteal) over and behind mastoid tip, containing several drams of pus from which culture showed staphylococcus aureus. A large

*Read before the Virginia Society of Oto-Laryngology and Ophthalmology at its meeting in Norfolk, November 1, 1922.
Read by title before the Medical Society of Virginia at its fifty-third annual meeting in Norfolk, October 31—November 3, 1922.

fistula extending through the digastric groove into mastoid tip which was completely hulled out by necrosis of cellular structure. In the upper portion of the mastoid, the cells had been replaced by sclerosed bone by which the pus in the tip was walled off from a practically normal antrum. The lateral sinus plate was necrosed from just above the bulb upward toward the knee for one-half to three-fourths of an inch. Sinus was apparently healthy. Patient had an uneventful recovery and the wound was healed in about three weeks.

Summary and Conclusions.

1. The patient probably had a mastoiditis a year and a half ago, though with considerable doubt as to whether or not there was involvement of the middle ear.

2. During present illness a mastoiditis due to staphylococcus aureus with much pus and considerable cell destruction in the tip and with practically no pain and without involvement of the tympanum.

3. Bony sclerosis between antrum and the infected area.

4. Blood culture negative.

The question naturally arises whether we are dealing with an idopathic, or primary, mastoiditis; or a latent condition that has existed for a year and a half without giving signs or symptoms.

I think that we are dealing with a very low grade, quiescent, rather than a primary, infection, in view of the fact that we have a negative blood culture and no evident source of infection necessary for a metastatic process. And, furthermore, the absence in the mastoid antrum and tympanum might be explained by the fact that the sclerosis, produced by the inflammation a year and a half ago, prevented the extension of the infection upward into the antrum.

316 *East Franklin Street.*

ELECTROCARDIOGRAPHY IN THE DIAGNOSIS OF CARDIAC CONDITIONS.*

By F. C. RINKER, A. B., M. D., Norfolk, Va.

The use of the electrocardiogram is constantly increasing and its value as an aid to diagnosis and prognosis of cardiovascular conditions is becoming more indispensable. Much of the recent knowledge of the disorders of the heart's mechanism has been the result of graphic means of precision of which the electrocardiogram is the most valuable.

The diagnosis of arhythmias, the localization of conductive lesions and the conclusions reached relative to the various tachycardias have been greatly aided by the interpretation of electrocardiographic records. No one recording instrument, however, should or ever will supplant the practical methods of physical diagnosis, but their value as adjuncts to clinical methods cannot be too strongly emphasized.

Electrocardiography is dependent upon the physiologic law, that when any muscle is stimulated the portion to which the stimulus is applied goes into contraction and this area becomes electronegative to the resting portion of the muscle.

It has been demonstrated that electric currents are produced with each heart beat. It is also an accepted fact that the cardiac beat has its origin in the sino-auricular node of Keith-Flack and that the impulses are transmitted to the ventricles through the auriculo-ventricular bundle of His.

These electric reactions are recorded by the electrocardiogram on a moving bromide paper in a camera mechanism by means of a string galvanometer. Whenever an abnormal condition occurs in either the conduction or contraction systems there results an abnormality in the tracing photographed. Experimental work has shown that typical abnormalities in the electrocardiographic records occur in given pathological conditions existing in the cardiac musculature.

The phases of the cardiograms have been named for convenience P. R. T. waves. P. represents auricular contraction and the origin of conduction, R. represents conduction of the impulse through the auriculo-ventricular bundle, and T. represents contraction of the ventricles.

Let us now consider some of the more common abnormal conditions occurring in the cardiac mechanism which may be interpreted by the electrocardiogram:

I. Cardiac Arhythmias:

a. *Sinus Arhythmia* is a condition occurring in young persons, caused by vagus stimulation, resulting from respiratory action which affects the sino-auricular node and causes

*Read at the fifty-third annual meeting of the Medical Society of Virginia in Norfolk, October 31—November 3, 1922.

slight slowing of the entire heart. The condition is non-pathological.

b. *Premature Contractions and Extrasystoles*: Premature contractions are very common in adult life. They may occur in perfectly normal hearts as a result of nervous irritability. The tracing shows an early occurrence of a cardiac cycle at varying intervals, the resulting cycle, however, is normal. When such a condition is found in adults or in persons with chronic heart disease, one should suspect myocardial changes.

Extrasystoles result from stimuli arising at some point remote from the sino-auricular node. The point of origin may be either in the auricular musculature, in the ventricular musculature, or at some point in the net-work of Purkinge. The tracing shows aberrant conditions existing in any of the three phases of the electrocardiogram. When found, extrasystoles indicate myocardial changes.

c. *Auricular Fibrillation* is the most important and the most frequent disorder of heart rhythm. It was described by MacKenzie in 1890 as an entity. It is due to some myocardial change resulting from (1) Foci of infection, (2) Retention of toxic products, resulting from faulty metabolism associated at times with imperfect renal function and (3) Increased cardiac work due to valvular lesions, hypertension, or to some alteration in cardiovascular balance.

Auricular fibrillation may be suspected when there is a rapid irregularity of the heart's action associated with failure of all of the heart beats to reach the radial pulse. A positive diagnosis of the condition, however, can only be arrived at by the use of the electrocardiogram.

Mechanism: The stimuli arising in the sino-auricular node are extremely rapid, from 300 to 1,000 per minute. The auricles do not contract but go into a state of twitching and act only as reservoirs. Owing to the rapid and inadequate formation of the stimuli, only a few of the impulses get through the auriculo-ventricular bundle and an irregular, disordered, ventricular action results. Thus we find in this condition electrocardiographic tracings showing a marked increase in the auricular rate over the ventricular rate. The findings are characteristic: there is a gross irregularity, the cycle lengths are not uniform and for each R. wave there are a varying number of P. fibrillations, but the P. wave is absent.

The electrocardiogram is not only of value in the diagnosis of auricular fibrillation but it is an aid to the therapy of such a condition. Digitalis and the digitalis series or Quinidine are the drugs commonly used in the treatment of the disease. During the course of treatment one can more intelligently carry out such treatment if tracings are made from time to time. Here particularly the electrocardiogram is of much more value than any other means of precision.

II. Ectopic Rhythms and Tachycardias:

Whenever the impulse arises at a point remote from the sino-auricular node, the resulting heart beat is referred to as being ectopic. Such a condition is shown on the electrocardiographic tracing and it also shows whether the impulse orignates in the auricular musculature or in the ventricles.

a. *Bundle Branch Block* is a condition resulting from some interference with conduction along either the right or the left branches of the His bundle. The electrocardiogram records a picture typical of the condition and shows which branch is affected. This interference with normal cardiac mechanism is the result of focal myocardial changes and is not compatible with long life.

b. *Tachycardias*. The various types of tachycardias are ectopic except sinus tachycardia.

1. *Auricular Tachycardia*: In this condition the focus of stimulation has its origin in the auricular musculature. Each auricular contraction is followed by a ventricular beat and the rate does not exceed 200 per minute. The condition frequently occurs paroxysmally, lasting for only a short time. The P. wave is abnormal, usually inverted, indicating that the impulse arises outside of the sino-auricular node.

2. *Auricular Flutter*: May be described as an increase in the number of P. waves on the electrocadiogram to 200 or more per minute. The condition is usually accompanied by Block resulting in auriculo-ventricular dissociation of varying degrees. The Block is due to the inability on the part of the His bundle to transmit the impulses so rapidly, or to inability on the part of the ventricle to respond so rapidly.

Pathological difference between auricular tachycardia and auricular flutter is not known, but clinical and electrocardiographic findings justify a separation and classify flutter as a clinical entity.

III. Disorders of Conduction:

Transmission of impulses along the normal conduction paths of the autonomic nervous system of the heart may be interrupted by disease. The electrocardiogram not only aids in the diagnosis of such disorders but localizes the point in the conducting system which is causing interference.

(a) *Heart Block or Complete Auriculo-Ventricular Dissociation*: This condition is due to failure of the His bundle to conduct the impulses originating in the sino-auricular node. The ventricles, however, assume an independent impulse and contract slowly and late.

One may suspect heart block when there is a ventricular rate of less than 40 per minute, but a definite conclusion can be arrived at only by the use of the electrocardiogram. Tracings show a prolongation of the P-R interval and there will occur more than one P to each R wave.

(b) Conditions of poor conduction through the auriculo-ventricular bundle or along either of the bundle branches are shown on the electrocardiogram by splintering, or other aberrant conditions occurring in the R wave. When such abnormalities are found, myocarditis of varying degree should be suspected.

IV. Ventricular Preponderance:

The reliability of electrocardiography as a method of determining ventricular hypertrophy has been severely cristicised. Its value at present, however, is accepted by most authorities. To the clinician the knowledge of ventricular preponderance in cases of valvular heart disease is of great value, not only in the treatment and management of the case but in the prognosis.

The tracings show: (1) Negative R waves in lead, 3 with positive R waves in lead, 1 in cases of left ventricular hypertrophy, and (2) in cases of hypertrophy of the right ventricle there are negative R waves in lead 1 and positive R waves in lead 3.

Abnormalities or varying types are found in the T waves in cases of myocarditis and coronary sclerosis.

However great my desire may be to go into more detail in the description of the various cardiac conditions and their relation to electrocardiographic findings, time requires me to stop here.

In conclusion, I wish to say that I believe the electrocardiogram is going to be increasingly used by clinicians and its value as a means toward better therapy and more definite prognosis will be accepted more completely within the near future.

Sarah Leigh Clinic.

References.

Willius, F. A.: "Clinical Electrocardiography"—W. B. Saunders Co., 1922.
Lewis, T.: "The Mechanism and Graphic Registration of the Heart Beat," P. B. Hoeber, N. Y. 1921.
Lamson, P. D.: "The Heart Rhythms," Williams & Wilkins Co., Balto., 1921.

PAPILLARY CYSTADENOMA OF THE OVARY.

Pathology and Prognosis.

By JAS. W. GIBBON, M. D., Charlotte, N. C.

Papillary cystadenoma of the ovaries is a disease distinguished by the obscurity of its etiology, its extraordinary pathologic manifestations, the variabily of its course, and uncertainty of prognosis. While the rarest cystic disease of the ovaries, it occurs often enough to deserve study by the surgeon as well as the pathologist. The surgeon should regard it with more than temporary interest, since the treatment and prognosis each are influenced by the pathology of the individual tumor.

The frequency, as compiled by many observers, has roughly approximated. Thus, of all cystic diseases of the ovaries, Erdmann and Spaulding found papillomata in 18 per cent. of the cases, Pfannenstiel in 15 per cent., Coblentz in 10 to 15 per cent., McCarty, at the Mayo Clinic, found 163 papillomas among 1,000 cases of cystic ovaries. Kelly gives 22 per cent., and Libbert 27.5 per cent. The frequency therefore varies from 10 to 27.5 per cent.

The relation which papillary cystadenoma holds to other ovarian pathology is best illustrated by the classification of Hertzler.

A. Retention Cysts.
  1. Luteal Cysts
  2. Follicular Cysts
     a. Graafian Follicle Cysts
     b. Multiple Fibrocystic Degeneration
     c. Tubo-ovarian Cysts.

The characteristic of this group is that they are not neoplastic, and are formed by some minor disturbance in the normal physiologic processes in the ovary.

B. Proliferating Cysts.

1. *Simple Proliferating Cysts of the Ovary.* In this type, the epithelium of the cyst takes an active part in the growth of the tumor, but its chief activity is manifest in an increased secretion, cell proliferation being confined to a degree necessary to line the cyst wall as it increases to accommodate the collecting fluid.

2. *Adenomatous Cysts of the Ovary.* Here the epithelial proliferation is in excess of that required to line the cyst walls, and is regarded as a true neoplasm. Of these cysts, there are two distinct varieties, depending on the character of the fluid of the cyst.

a. Pseudo-mucinous cysts are those in which the cells secrete a thick gelatinous, so-called pseudomucin. These cysts may again be divided into the *Everting or Glandular Type*, in which the proliferating cells form new cysts in the walls of the mother cyst, and a large multilocular cyst is the result. Or the proliferating cells may form papilla projecting into the cyst cavity, the *Inverting or Papillary Type.* While the proliferating cells in the pseudomucinous cysts may take either of these forms, these cysts are commonly of the everting or glandular type, forming large cystic tumors with great numbers of varying size smaller cysts in the walls. Papillary projections may occur into some of the cyst cavities, but it is unusual. A final and very significant feature of the pseudomucinous cyst is the remote probability of malignant degeneration, and this stands in sharp contrast to those cysts which abundantly develop intracystic papillary growths, and are so likely to malignant change.

b. The other variety of Adenomatous Cyst of the ovary is the *Serous-Cystadenoma*, because the fluid secreted is thin and serous. This tumor may also be of the everting or glandular type, or inverting or papillary type, just as in the pseudomucinous, but with far greater frequency it is characterized by extensive intra-cystic or papillary growths. Papillary serous cystadenomas occur later in life than the pseudomucinous cysts, and are very prone to malignant changes. It is the individual pathology of this cyst, the papillary cystadenoma, that is herein considered.

Age.—The most common age of occurrence is between 40 and 50 years. The next most frequent decade is 20 to 30. Childbirth has not been considered to have any bearing on the causation.

Fig. 1 Shows both papillomatous ovaries from the same patient. The large cauliflower-like papillomata can be seen growing on the external surface of the unruptured larger cyst. The smaller cyst has been opened to show the same growth on the interior.

Origin.—The origin of these tumors has long been a subject of confusion and difference, and even today there is no unity of opinion regarding this. Discussions have centered about the germinal epithelium, the Graafian follicle, Wolffian body, and Pflueger tube as possible points of origin. The most recent theory of histogenesis is presented by Goodall after a long and comparative study of many microscopical sections. His conclusion is that the origin of all epithelial structures within the ovary is from the germinal epithelium, and he does not believe that it is ever possible for tumors to develop from the Graafian follicle. This view has been accepted by most authorities.

Pathology.—Ovarian papillary cystadenoma is a bilateral disease, developing simultaneously in both ovaries. There is, however, usually very great disparity in size between the two cysts, and the stage of the disease is commonly more advanced in the one than the other. The cysts may be multilocular, but as a rule there are not as many daughter cysts as in the pseudomucinous variety. They are chiefly characterized in the late stages by the abundance and prominence of the papilloma-

tous growths. If there are several cyst cavities, each usually contains its share of papillomata. These cysts do not attain a large size, at least so large as the pseudomucinous, and the case reported by Bland-Sutton where the tumor weighed seventy lbs. is the exception and not the rule. In the early stage, the capsule is firm, smooth, and thin, and projecting from the inside of the cyst-walls are the papillomatous growths. These vary greatly in number and size, depending more or less on the stage of the disease. They may appear in the early tumors as small, warty, pea-sized or shot-like elevations along the interior wall of the cyst. At the other extreme, the papillomata may form enormous, irregular, cauliflower growths filling almost the entire cyst cavity, and be so closely packed together as to present the appearance of a solid tumor. The papillomatous growths are soft, semi-gelatinous, bleed easily, glistening, slimy and sticky. The color depends on the blood supply. In well supplied areas it is pinkish, though it may be a dirty gray or yellow. There may be more or less calcific deposit, varying from small gritty deposits to larger plates.

The fluid in the cyst is characterized by the absence of pseudomucin, and the presence of a large amount of albumen. It is not tenacious, rather serous, and is usually yellow or straw-colored, or dirty green. Degenerations of one kind or another and hemorrhage alter the appearance of the fluid.

The papillomata in the first stages are limited to the interior of the cyst cavity, the capsule is smooth, there are no peritoneal implantations and no ascites. As the tumor grows, cell proliferation infiltrates the cyst wall, the capsule becomes roughened, nodular and friable, and finally is ruptured or perforated, and the cauliflower masses of papillomata continue to grow in great abundance on the external surface of the cyst, and project free into the general peritoneal cavity. Perforation of the capsule in papillary cystadenomata of the ovary usually comes at an advanced stage, and mutiplies many times the gravity of the disease. It is not uncommon to find a large cyst on one side in these late stages of growth, while the opposite one is very small, and contains only a few warty excrescences lining the inner wall of the cyst. In other words, while the occurrence of this disease is simultaneous in both ovaries, the stage of development of the two cysts is usually markedly different. It has been suggested that the involvement of the second ovary is the result of so-called "cell droppings" or contact metastasis from the opposite, primarily involved one.

With the perforation of the capsule and external growth of the papillomata, infection of the peritoneoum by contact metastasis is the outcome. Warty, nodular transplants then develop and spread over the entire peritoneal surface, the dispersal of the cells being facilitated by the continual movements of the intestines. Prompt association with this infection of the peritoneum is the production of an enormous amount of free fluid in the peritoneal cavity. The great bulk of this accumulating fluid is one of the extraordinary features of the disease, and it is principally for enlargement of the abdomen that these patients seek relief. The size and distention of the abdomen quickly becomes collosal, as the

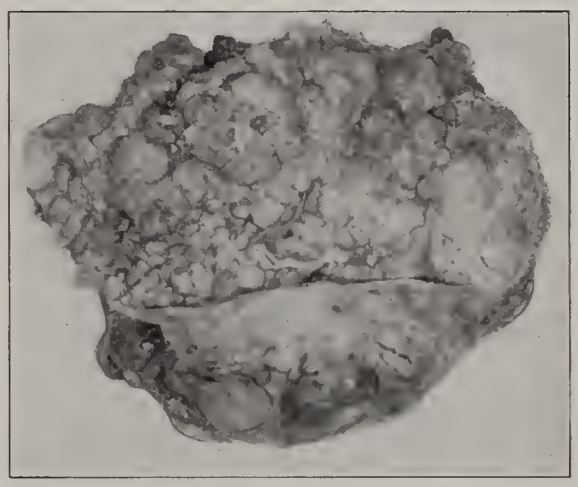


Fig. 2. Shows the interior papillomatous growths in a larger cyst which has been opened. The cyst wall is seen in the lower half of the picture.

fluid increases and even obscures the presence of the ovarian tumor. In elderly women suffering from tremendous ascites associated with a pelvic mass, the possibility of a papillary cystadenoma of the ovary with peritoneal implantations is very likely. The ascites, however, does not invariably mean peritoneal metastases have occurred. In one of our own cases, on opening the abdomen, an enormous amount of green fluid was evacuated, the right

ovary presented a large papillary cystadenoma which had perforated the capsule and developed masses of papillomata on the external surface, and the left ovary, also cystic, was smaller and showed nodular excrescences only over the inside of the wall. The peritoneum in the lower half of the abdomen was hyperaemic, angry looking, and thickened, but without any evidence of secondary, metastatic nodules.

The question of the origin of this great bulk of ascitic fluid has been raised. Klein, in studying the microscopical appearance of the papillomata or warts, has remarked upon the structural resemblance to the chorionic villi, and came to the conclusion that the "epithelium in some papillomatous cysts possesses a secretory function analogous to that of the chorionic villi," and that the ascites was the result of the secretory activity of the epithelium covering the papillae. It does not, however, seem improbable that some of the fluid in the abdomen might not be due to an irritant reaction in the peritoneum in which case the peritoneum itself secretes fluid, and is similar to the hydroperitoneum observed in the carcinomatosis peritonei, or tuberculosis of the peritoneum.

Structure.—Papillary cystadenomata are composed of a rich and abundant stroma supporting the epithelial elements. The stroma constitutes the wall of the cyst, and the stalk of the papilloma. The epithelial cells are cuboidal or low columnar and line the inner wall of the cyst, and cover the stalks of the papillomata in one continuous single layer. They lie upon a uniform basement membrane, and show no evidence of infiltration. Carcinomatous change is the most likely and is manifested by a multiplication of the lining cells instead of one layer there are many, the cells become large and atypical and mitotic figures will be seen. The basement membrane is broken through and the stroma infiltrated. The orderly arrangement ceases and the cyst becomes the papillary adenocarcinoma.

Course.—The course of papillary cystadnomata is slow and relatively benign, still there is always the question of malignancy. The clinical behavior of these cysts varies to such striking degrees. Though recognized as benign, often it is a lesion very readily converted to a malignant one, a change which is not necessarily perceptible in the gross appearance. The true papillary cyst-adenocarcinoma may differ not at all from the benign papillary cystadenoma in the clinical course and gross pathology. So that when confronted with the condition, there is no little uncertainty about how benign or how malignant the tumor may be. Ewing believes that "the majority of these adenomas long retain their benign type, and that there is some ground for the view that the malignant tumors are carcinomatous from the first." On the other hand, Pfannenstiel considers that 50 per cent. of the papillary cystadenomata reveal an adenocarcinomatous structure in at least some portions of the tumor. Erdmann considers these tumors all potentially malignant.

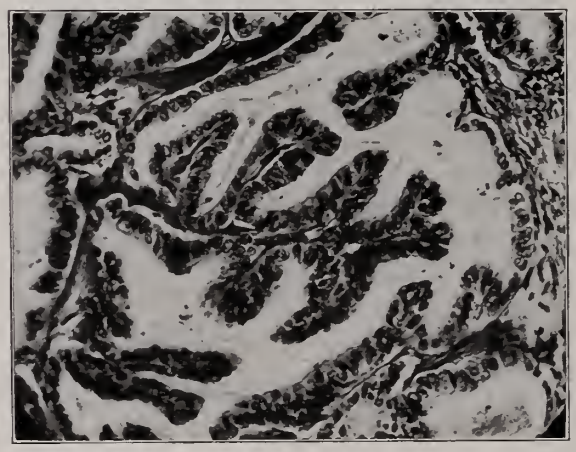


Fig. 3. Shows a high power photomicrograph of a papillomatous cyst. The cyst walls and the papillary projections are seen to be largely lined by a single layer of epithelial cells. This represents the structure of the tumor in which the prognosis for cure is best after the surgical removal. As a tumor, it is of slow growth and relatively benign.

Yet, proof of the benignity of many papillary cystadenomata, even when peritoneal implantations have occurred, is seen in cases which have had a laparotomy years after a previous oophorectomy for this disease, by the observation that all the peritoneal implantations had disappeared. Corcia reports the case of a woman, aged 32, with bilateral papillary disease of the ovaries, widespread peritoneal implantations, and general ascites, who was perfectly well seven years after a double oophorectomy. Other similar reports are to be found. Nevertheless, there are also cases reported in the literature which were unquestionably malignant, cases in which there were general metastases. Wagner's case of a woman, aged 48, had been tapped over a period of ten years on account of an ovarian tumor, and was found

at autopsy to have papillary metastases in the chest well, left flank, and right axilla. Wilkes and Moxon give an autopsy record of a woman, aged 60, with papillary metastases in the lungs and liver. Bland-Sutton reports the case of a woman of 56 years from whom he removed bilateral papillary cysts and the uterus. Six years later he removed a secondary papillomatous growth from the sternum. She died as a result of a recurrent growth in the superior mediastinum and upper right half of the thorax. Erdmann reports two cases in which the tumor recurred in the abdominal wound after the removal of the ovarian growths, one fourteen months, and the other twelve years after the primary operation. Even when the tumor is recognized as clearly malignant, the course may be unusually slow and recurrences late, as illustrated by another case reported by Erdmann. A woman aged 54, had papillary disease of both ovaries. The ovarian masses were removed, but considerable peritoneal deposits remained. The pathologist prounounced it Ovarian Papillary Adeno-Carcinoma. Twelve years later she returned for re-operation with an extensive malignant peritonitis and metastases in the abdominal scar.

In papillary cystadenoma of the ovaries, lymphatic invasion is very infrequent, and distant metastases, while reported in certain cases, are not the rule and, when they do occur, do so only after long intervals. The involvement of the peritoneum is late in the course of the disease and not a true metastasis, but a direct implantation. Cases in which there are metastases are the cases in which already malignant change may have taken place in some part of the tumor, and it is the view of the writer that metastases never occur in the true cystadenoma. It is very likely this fact which accounts for the marked difference in the ultimate results following the operative treatment of these tumors.

Prognosis.—The widest extremes have been observed in the prognosis following the surgical treatment of papillary disease of the ovaries. Bland-Sutton remarks that when the papillomatous cysts are removed, "the fluid ceases to accumulate and the peritoneal warts disappear, as a rule." A great number of women from whom papillary cysts are removed make durable recoveries, but it is still difficult to assert that the recovery is permament. Some years ago papillomatous tumors of the ovaries were all considered malignant, forming a special class, and many times it happened that cases which presented a very extensive process after opening the abdomen have

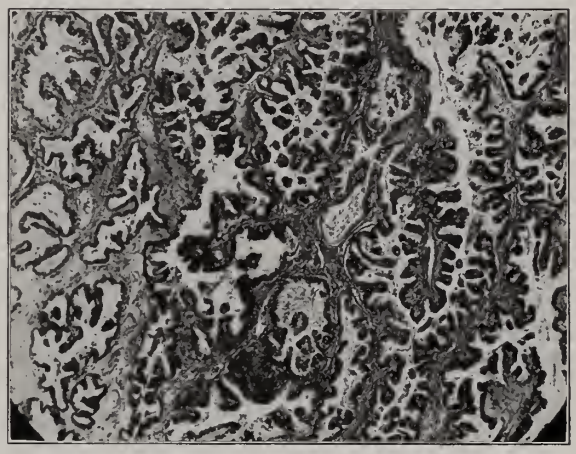


Fig. 4. Shows a low power photomicrograph of a papillomatous cyst.

been considered "inoperable" and the abdomen closed, and an early death of the patient from cachexia resulted. Pfannenstiel was one of the first to demonstrate that these papillomata may not be originally malignant, and may be cured by removal of the cystic ovaries. Hyde believes a certain number are cured, but owing to the scantiness of the medical literature, it is difficult to determine how many. It is generally estimated that about 50 per cent. undergo malignant change when, of course, the possibility of cure is not as good. Codman in discussiing "Malignant Peritonitis of Ovarian Origin" based on the study of twelve cases deducts the conclusion that "the prognosis is more favorable than is usually believed." Even incomplete removals are known to have been followed by cures. I believe the general trend is to view even extensive cases more hopefully, and to at least give the patient the best chance by removing the original tumors.

The results following the treatment of these lesions can best be understood by classifying them into several groups. In the first definite group the metastases entirely disappear after extirpation of the primary tumors. This favorable outcome occurs almost exclusively with structures which are non-malignant, and in which the lining cells of the papillae are not atypical and appear in orderly, single rows.

This spontaneous retrogression has been observed by many writers.

In another group, the implanted nodules continue and spread over much of the peritoneal surface, causing adhesions between the intestines, the accumulation of large amounts of ascitic fluid, and finally, death from cachexia, or intercurrent disease. These are the patients which may live for long periods of time after the removal of the ovarian tumors, but who require repeated tappings to drain off the excess of the accumulating fluid, until death finally brings an end.

In a third group the tumor recurs locally after extirpation in the form of papillary nodules at the stump, in the wound, or in the peritoneum. In this group, an unusually long period of observation is necessary, as recurrences have been observed at the site of the tumor or in the peritoneum after 13, 15, 20 and 21 years, and in the line of incision after 21 years. (Malcolm, Opitz, Pozzi, Holzapfel, and Olshausen quoted by Ewing). Even after recurrences the patient may survive many years in fair health.

Finally, the implantations may rapidly or gradually change their type and become malignant, spreading through the abdomen and causing distant metastases and death.

The prognosis then depends very largely on the degree of malignancy of the individual tumor, and is probably best attained after a thorough investigation of the histological structure. In the first group, where there is a single layer of comparatively normal epithelial cells lining the cyst spaces and covering the papillae, cure should follow the extirpation of the original tumors, in spite of the fact that there may be widespread peritoneal implantations at the time of the operation. In the second and third groups, the prognosis for life is still fair. In either of these groups the patient may live a number of years in comparative comfort after excision of the primary tumors. In the fourth group the prospects are never good, but even then the progress of the disease may be slow, and years may be added to the life of the patient by removal of the ovarian growths.

With these facts in mind, it would seem justifiable in all cases to remove the primary tumors regardless of how extensive the peritoneal involvement, or what the pathologist reports.

A formulation of the ultimate results based on a more careful microscopic control would likely add much to our present knowledge of this unusual disease.

1206 *Realty Building.*

TIME AND MORTALITY.*

By J. E. RAWLS, A. B., M. D., F. A. C. S., Suffolk, Va.
Senior Surgeon to Lakeview Hospital

Some months ago it was my pleasure to read before a neighboring medical society a paper entitled "When to Operate for the Questionable Acute Appendix." In this paper we attempted to show how the element of *Time* played in the *Mortality* of these acute appendiceal conditions.

Today, in this paper we wish to re-emphasize this truth by reporting further histories or cases. With this aim in view, we have selected the acute appendiceal cases operated on in Lakeview Hospital from October 1st, 1919, to Ocotber 1st, 1921. During this period there were 177 operations for acute appendicitis (excluding the chronic cases). The mortality in these 177 cases, covering all degrees of infected pathology from acute non-perforated appendix to a general diffuse peritonitis, was a fraction over four and one-half per cent.—in numbers eight died out of 177 cases and 169 recovered. All cases were treated surgically.

For surgical treatment, acute appendicitis, can be divided into two classes—*non-perforated and perforated.* Of these 177 cases there were 114 non-perforated and sixty-three perforated, covering all degrees of infective pathology from an acute perforated to a general diffuse peritionitis. In the 114 non-perforated cases there was no mortality, no deaths. In the sixty-three perforated cases there was a mortality, there were eight deaths.

We will briefly review the histories of these eight fatal cases to see if we cannot gain some helpful information, especially emphasizing *first*, the time elapsed between the onset of the symptoms and the admission of the patient to the hospital; *second*, the time elapsed between admission to the hospital and time of operation; *third*, the pathology found at time of operation.

I. Case number 1390, male, age 25. First

*Prepared for but not read before the fifty-second annual meeting of the Medical Society of Virginia in Lynchburg, October 18-21, 1921.

attack. Was admitted to hospital at 4:00 P. M. November 9, 1919. *For seven days previous to admission to the hospital, patient had been suffering with a general abdominal pain and tenderness*, but his pain did not definitely localize until the afternoon before the patient was admitted to the hospital. The patient was operated on at 6:15 P. M., two hours and fifteen minutes after admission. The pathology found was an appendiceal perforation with a general peritonitis. He died.

II. Case number 1434, male. age 68. First attack. Was admitted to the hospital at 9:00 P. M. November 23, 1919. *For four days before admission to the hospital had been having general abdominal pain which began in epigastrium but did not localize until the night before admission to the institution.* The patient was operated on at 9:50 P. M., fifty minutes after admission. The pathology found was a perforated appendix with free pus in the general peritoneal cavity, causing a general peritonitis. He died.

III. Case number 1839, female, age 28. First attack. Was admitted to the hospital at 5:25 P. M. on May 4, 1920. *One week before admission to the hospital developed a general abdominal pain followed by nausea and vomiting, and pain localized in region of appendix twenty-four hours after onset of the disease, and six days before admission to the hospital.* Was operated on at 8:30 P. M., 3 hours and 20 minutes after admission. The pathology found was an appendiceal perforation with a general diffuse peritonitis. She died.

IV. Case number 1936, female, age 7. First attack. Was admitted to the hospital at 7:00 A. M. June 6, 1921. *Three days before admission to the hospital patient began to have abdominal pain which was relieved some by vomiting, but continued to have more or less pain, but pain never localized and general condition grew worse until patient was admitted to the hospital.* The patient was operated on at 8:25 A. M., 1 hour and 25 minutes after admission. Pathology found was a perforation of the appendix with the distal one-third of the appendix gangrenous and with free pus in the peritoneal cavity. She died.

V. Case number 1955. male, age 30. Second attack, which followed "Flu" eighteen months ago and localized. For last attack, admitted to hospital at 3:10 P. M. on June 21, 1920. *Two days before admission to the hospital at 2:00 P. M. had epigastric aching with vomiting, which pain localized in region of appendix within twelve to eighteen hours after onset.* Patient was operated on at 4:25 P. M., 1 hour and 15 minutes after admission to the hospital. Pathology found was a perforated gangrenous appendix with free pus in general peritoneal cavity. He died.

VI. Case number 2314, male, age 47. First attack. Was admitted to the hospital. 6:30 P. M. October 22, 1920. *Four days before admission to the hospital began to have general abdominal pain followed by nausea and vomiting but pain did not localize but was more tender in neighborhood of umbilicus and at times in the right lower quadrant of the abdomen.* Abdomen became markedly distended and hiccoughs began two days before admission to the hospital. Was operated on 1 hour and 25 minutes after admission. The pathology found was a perforated gangrenous appendix, five inches long, extending into the pelvis with pus free in the general peritoneal cavity. He died.

VII. Case number 2605, female, age 13. First attack. Was admitted to the hospital at 9:20 P. M. March 12, 1921. *Six days before admission had an attack of nausea. Two days later general abdominal pain began. More marked in the appendiceal region.* Some vomiting. On the day of admission pain more severe with frequent vomiting. Was operated on in 1 hour and 20 minutes after admission. The pathology found was a perforated appendix with pus free in general peritoneal cavity. She died.

VIII. Case number 2461, male, age 65. First attack. Gave a history of several attacks of renal colic. the last, six years ago. Was admitted to the hospital at 11:40 P. M., March 29, 1921. *Nine days before admission to the hospital was taken quite suddenly with violent pain just below umbilicus. Next day some general abdominal pain and soreness but less severe. However, more marked in lower right quardant of abdomen.* This soreness kept up each day and has had some vomiting. Was operated on 2 hours and 35 minutes after admission to the hospital Pathology found was

acute perforated appendix with pus free in the general peritoneal cavity. And he died.

COMMENT.

Now, here are eight deaths that could have been definitely prevented. Naturally, the question arises who is the guilty party? Upon whom shall the blame be placed? This question cannot be answered in this paper from the histories given, but it is hoped in the near future the blame can be placed upon the guilty party or parties, that these poor victims may be saved.

The parties subject to accusation can be divided into two distinct classes of individuals, and these two classes are divided by the door of the hospital. *First*, those that have charge of the patient before admission to the hospital; *second*, those that have charge of the patient after admission to the hospital. It is a known and accepted fact that all hospitals, of whatever standard, are attended with more or less mortality in operative cases. This is the experience with all classes of hospitals. It makes no difference whether the institution is a tyro or novice or whether it is a hospital of the most perfect standardization. A varying degree of mortality rate accompanies all classes of hospitals. All of the operative cases cannot be saved by simply sending them to some definite institution of high repute. So we have to look elsewhere to be able to save all of those patients whose histories were read.

This leaves us to consider those that have charge of the patients before admission to the hospital. These are divided into four classes of individuals.—

1st. The patient's neighbors and friends.
2nd. The patient's immediate family.
3rd. The patient himself.
4th. The patient's family physician.

The period or duration of the disease before the patient is admitted to the hospital generally determines the course of the disease after admission to the hospital. This is the prophylactic, or better, incipient period. Yes, this period holds in its grasp the patient's destiny as to life or death. This was emphasized in reviewing the 177 cases reported, when it was found that there were no operative deaths in the 114 non-perforated cases, and further that *no perforations took place under twenty-five hours from the onset of the disease, save one*, which was twelve hours, *and it was the fourth attack.* In other words, based on these 177 cases, there would have been no deaths had they been admitted to the hospital and operated on within twenty-five hours from the first symptoms of the disease. *This is a fact that we should not forget.* The shortest period, with the fatal cases reported, from onset of the disease until admitted to the hospital, was over two days, about fifty hours, and the longest period was nine days, and in one case in which the pain had been localized for six days before admission. Is it not reasonable to suppose that these eight cases would have been saved had they been admitted to the hospital and operated on within the first twenty-five hours of onset of symptoms?

If getting them in the hospital early will save them, how can this be done? If the delay is due to the patient's neighbors, or to his family, or to himself, then these obstructions should be removed. How may they be removed? *Only by public education.* We, as a profession and nation, are and have been trying to educate the public on questions of typhoid fever, venereal diseases, cancer and tuberculosis. We have recently received literature stating that the Virginia State branch of the American Society for the Control of Cancer is in process of organization. The Chairman of the committee for Virginia is our esteemed Dr. Robt. C. Bryan, of Richmond, Va. An intensive campaign will be launched throughout the United States from October 30 to November 5, 1921, and I dare say, the slogan will be prophylaxis or early diagnosis and definite action. This is a humanitarian and commendable work. May the efforts of this organization be felt throughout our country by alleviating suffering and saving humanity. But, are we not neglecting an important branch of diseases, when we keep silent on acute abdominal conditions, especially acute appendicitis? We must not forget that over 12,000 die annually of this disease in the United States.

Would it be out of place to say that the public should be taught three facts:

1st. The location of the vermiform appendix;

2nd. That the four usual symptoms of appendicitis, are general abdominal pain, nausea or vomiting, localized pain anl tenderness,

and fever, and that the symptoms take place in the foregoing order. (Murphy);

3rd. *And lastly, that practically all get well if operated on within the first twenty-five or thirty hours after onset of disease.* This would greatly help the family physician to overcome two of the three obstacles that usually confront him when the acute abdominal conditions befall his patients.

The first obstacle is that the neighbor, family, and patient himself believe he has the "bellyache" or acute indigestion and thus he doctors himself and delays sending for the family physician. Thus, the family physician is unable to get patient to the hospital in time.

The second obstacle the family physician has to overcome is to persuade the neighbors, family, and patient the necessity of early operation. *Proper public education would overcome both of these.*

The third obstacle that confronts the family physician and causes delay is the "questionable appendicitis," that is, questionable so far as symptoms are concerned. This is the story of some neglected cases from the lips of the most conscientious and efficient family physicians. They say that the abdominal symptoms began several days ago but symptoms were "questionable" and pointed to no definite pathological entity. This is true as quite a number of appendiceal attacks come on indefinitely as to symptoms, and thus it is difficult or impossible to make a definite diagnosis. I received a letter a few days ago from a good, level-headed, conscientious physician who stated that he never allowed himself to give the second dose of morphine in any acute abdominal condition without considering surgical treatment.

John B. Murphy once stated dogmatically that the time to operate on acute appendicitis was as soon as a diagnosis was made. At first most of the profession thought this radical, but time has brought most of us to this idea. Now, to go a step farther, *and say the time to operate for appendicitis is before the diagnosis is made would seem quite radical. This is what we claim in these questionable abdominal appendiceal conditions, and the operation should take place as early and as promptly as in the most typical acute clinical history. To operate and find no definite pathology would be a mistake coupled with no mortality.* To delay, waiting for more definite symptoms to develop, carries a great number of unfortunate victims to death, as was the story with some of the fatal cases reported. *If a mistake is to be made, by all that is good and holy, make the former. Remember that it is a question of time, the period from the onset of the disease to time of operation that will annihilate the mortality, and that only.*

Delay and the ice bag play the same role in acute appendicitis, as delay and cod liver oil play in the incipiency of pulmonary tuberculosis, or delay and the local application of some favorite salve play in the cure of cancer in its early stages. These measures inspire false hope which will carry a great number to destruction and feed your mortality rate. Mortality will never be reduced to a nonentity by discussing and considering pathology and technique at operation. Mortality must be reduced and lives must be saved by early and thorough definite action.

Save life! This is the physician's true mission. This is why so much time has been spent in talking about the eight unfortunate ones that were lost, and casually of the 169 that were saved. The saved ones should not concern us so much. Remember, the Great Nazarene came to save that which was lost, and was concerned, not in the ninety and nine, that were safely led, but the one that went astray. May we as true physicians, apply this principle, physically, in our life's work.

Correspondence.

Bonds for Good Roads.

The Plains, Va.
Feb. 26th, 1923.

To The Editor:

In my article published in one of your recent issues, advocating an increased tax on automobiles, I seem to have given some of my friends the impression that I was opposed to the Bond Issue. On the contrary, I believe that the Bond Issue is the most *economical*, *quickest* and *best possible plan* for the financing and building of our roads. And I only suggested the increased tax on automobiles as a substitute, in case the Bond Issue should again fail to pass the Legislature; also to emphasize as strongly as possible how much slower and more burdensome any "Direct Tax"

plan for building roads must necessarily be, as compared to the Bond Issue plan.

Indeed, either the double tax on automobiles, or the proposed 3 cent tax on gasoline, would produce comparatively so little money to work with, that we would probably be compelled to put on both in order to institute a "Pay-as-you-go" plan that would really go anywhere, that is to say, would give us an appreciable mileage of good roads in a reasonable length of time. Whereas the advocates of the $12,000,000 Bond Issue estimate that a 1 cent gas tax will alone take care of this amount of bonds, both interest and sinking fund.

North Carolina has already issued in

Road Bonds	$ 65,000,000
West Virginia	50,000,000
Maryland	40,000,000
New Jersey	40,000,000
Pennsylvania	50,000,000
and New York State	100,000,000

If there is in the State of Virginia such an anomaly as a country doctor who is opposed to the Bond Issue, I would advise him to take a trip into some of these States, as I have done, drive over their good roads and ask the people there what they think of the Bond Issue, then come home, settle down in the mud again, and ask yourself what you think. And, if you still think that you prefer the mud, you had better call in two other physicians and a magistrate at once and have your mental condition looked into.

I know of no State that has yet succeeded in building a Highway System, worth calling such, without a Bond Issue. In fact, I have on my desk now a letter from Mr. V. D. L. Robinson, Secretary of the Virginia Good Roads' Association, in which he says that Ohio is the only State that has attempted a large Road Program without the issuance of Bonds, and that there, with a plan by which the counties put up part of the cost, it has resulted in a *disconnected, patch-work* system of roads.

Last winter while the Legislature was wrangling over the Bond Issue and getting itself "dead-locked" and I was riding *horse-back* over roads that were already "dead-locked" to everything except the horse, I circulated no less than three petitions, got them signed by many of the leading citizens of this County and sent them in—all *in favor* of the *Bond Issue*. And *I am as much in favor of it now as then.*

I hope that I have cleared up any erroneous impression that I may have given in my recent letter, as to my attitude toward the Bond Issue.

RICHARD MASON, M. D.

Analyses, Selections, Etc.

Transmission of Syphilis to the Second Generation.

Authors summarize: It is highly probable that all mothers of syphilitic children are infected, although occasionally mothers of syphilitic infants have negative Wassermann reactions, and more of the mothers of older syphilitic children have weakly positive or negative reactions. In all such instances the maternal infection is latent. A strongly positive Wassermann reaction in the mother does not mean that her infant will necessarily be infected, and, consequently, a syphilitic mother may bear a healthy child. When the mother's Wassermann reaction is positive with the cholesterolized antigen only, the chances are about seven to one that the infant is not syphilitic.

In most instances the father brings the infection into a family, although nearly 40 per cent of the fathers of syphilitic children have negative Wassermann reactions (at the time the children are examined). He may, therefore, transmit the disease after his infection has become latent. Transmission to the third generation is possible, but is incapable of proof.

Identical or single ovum twins born to a syphilitic mother are both infected or both escape the disease, double ovum twins, on the other hand, have the same fate as children of two successive pregnancies, i. e., either, neither or both may be infected.

Adequate treatment of the syphilitic mother during pregnancy will result in a nonsyphilitic infant if the treatment is instituted before the fetus is infected. Often a relatively small amount of treatment is necessary to accomplish this. Subesquent pregnancies are not protected unless treatment is continued. It is probable that when a mother becomes infected during the pregnancy the fetus is infected also, but the treatment of the mother may be followed by a milder infection in the infant and lessen the danger of a fatal infection in utero.

Placentas of syphilitic infants show characteristic diffuse microscopic changes in 27 per cent of cases. When such changes are present the infant later proves syphilitic in every instance.

Syphilitic infants at birth have Wassermann reactions in the following proportion: 37 per cent negative, 18 per cent weakly positive and 45 per cent strongly positive. After the first few weeks or months all syphilitic infants have strongly positive Wassermann reactions. Syphilitic infants over 2 months of age fail to show clinical evidence of the disease at one examination in 50 per cent of instances.

Nonsyphilitic infants may give weakly positive Wassermann reactions at birth which become negative later, but never give strongly positive reactions at birth or any other time. All mothers of such nonsyphilitic infants as give weakly positive Wassermann reactions have themselves reactions of equal or greater intensity than their infants. In these instances the fixing substances are probably transmitted from the mother to the infant without transmitting infection.

Hutchinson's triad of interstitial keratitis, enamel defects of the upper central incisors, and nerve deafness are rare.

In older children with active manifestations of syphilis the Wassermann reaction is positive in almost 100 per cent. Certain possible exceptions are noted all of whom had keratitis. A diagnosis of active hereditary syphilis in a child with a negative Wassermann reaction is justifiable only when the clinical evidence of the disease is absolute and unmistakable. (J. V. Cooke and P. C. Jeans, *American Journal of Syphilis*, October 1922.)

Bismuth in the Treatment of Syphilis.

Bismuth was first tried experimentally in dogs with a view to using it for the treatment of syphilis in 1889 by Babzer. He was, however, discouraged by the occurrence in these animals of stomatitis and of a condition resembling dysentery. In 1916 Saxton and Robert, of the Pasteur Institute, showed that tartro-bismuthate of sodium and potassium prepared by Cowley's method cured spirillosis in fowls. Later Levaditi used bismuth in the treatment of tryanosomiasis, and has recently published his conclusions regarding its effect on syphilis in man (Presse Med., July 26, 1922). Using the tartro-bismuthate referred to above, he finds that it secures rapid cicatrization of syphilitic lesions at any stage of the disease The effect appears to be lasting and the Wassermann reaction is kept negative by the treatment. He believes that bismuth is certainly superior to mercury, and equals the best arsenical preparations. These manifestations of the disease which resist both mercury and arsenic yield to bismuth, and so far, no lesion has been found to resist its action. The metal is slowly absorbed and persists in the organism. Thus "the patient continues to treat himself long after the doctor has done with him." (Editorial, Medical Press, London, August 30, 1922.

The Truth About Medicine

During January, the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

Lederle Antitoxin Laboratories:
- Bacillus Acidophilus Milk-Lederle.

E. R. Squibb and Sons:
- Bacillus Diphtheroid Allergen—Squibb.
- Staphylococcus Citreus Allergen—Squibb.
- Bacillus Influenzae Allergen—Squibb.
- Egg Yolk Globulin Allergen—Squibb.
- Horse Serum Allergen—Squibb.

Winthrop Chemical Company:
- Theocin Sodium Acetate.

New and Non-Official Remedies.

Digitan Ampules (for Hypodermic Use).—Each Cc. contains 16 minims (1 Cc.) of a sterilized solution of digitan (see New and Non-official Remedies, 1922, p. 105), equivalent to digitan, 1 1-2 grains (0.1 Gm.) Merck and Co., New York.

Digitan Solution (for Oral Use): 1 Cc. contains digitan (see New and Non-official Remedies, 1922, p. 105), 1 1-2 grains (0.1 Gm.) Merck and Co., New York. Jour. A. M. A., Jan. 13, 1923, page 106.

Bacillus diphtheroid Allergen—Squibb.—Prepared from the protein from Bacillus diphtheriae.

Staphylococcus citreus Allergen—Squibb.—Prepared from the protein from Staphylococcus citreus.

Bacillus Influenzae Allergen—Squibb.—Prepared from the protein from Bacillus Influenzae. For a description of the Bacterial Allergens—Squibb. See New and Non-official Remedies, 1922, p. 247.

Egg Yolk Globulin Allergen—Squibb.—Prepared from the purified globulin of yolks of hens' eggs.

Horse Serum Allergen—Squibb.—Prepared from protein of normal horse serum.

For a description of Food Allergens—Squibb, see New and Non-official Remedies, 1922, p. 241. E. R. Squibb and Sons, New York. (Jour. A. M. A., Jan. 27, 1923, p. 251).

Propaganda for Reform.

The Disappointments of Hexamethylenamin.—Hexamethylenamin has joined the large and growing group of drugs of which much has been expected but which have failed to justify the hopes of their champions. The use to which hexamethylenamin is still devoted with apparent scientific justification is in preventing the growth of micro-

organisms in the urinary tract and in destroying them when they are present in the urine in infectious diseases, such as typhoid fever. The drug is recommended as an antiseptic in cystitis and as a prophylactic prior to operations on the urinary tract.

Its possible efficacy, however, depends on the elimination through the kidneys with a urine that remains distinctly acid in reaction; otherwise, no benefit is to be expected. Hexamethylenamin has no material antiseptic value as an antiseptic in the cerebrospinal fluid during spinal meningitis. It is not a uric acid solvent. Finally, the drug has been shown to have no diuretic potency. Furthermore, hexamethylenamin is said to be liable to produce renal irritation when the dosage is large or the use protracted (Jour. A. M. A., Jan. 6, 1923, p. 37).

Present Status of Insulin.—The investigators of "Insulin"—the new pancreatic extract proposed for the treatment of diabetes—have applied for a patent on the product in Canada, United States and Great Britain. The patent for Canada and the United States has been tendered, when granted, to the University of Toronto. The University proposes to safeguard the product against commercial exploitation and to ensure the marketing of a standardized product. From the present indications it is hoped that the experimental period will be ended during the first half of 1923, so that the product will become available. Dr. McLeod believes that "Insulin" will never entirely replace careful dietary regulations, but that it is of undoubted value in assisting the weakened power to metabolize carbohydrates.

It is to be hoped that the University of Toronto will be able to control the advertising claims and methods of marketing of the product. (Jour. A. M. A., Jan. 6, 1923, p. 36).

Bacillus Acidophilus and Intestinal Putrefaction.—While the administration of soured milk products is at times beneficial, the cause of this beneficial action is still undetermined. The belief that the Bulgarian bacillus can be permanently implanted in the intestinal tract and that this implantation is responsible for the effects is no longer tenable. Of late attention has been called to the effects of the administration of milk cultures of bacillus acidophilus which is stated to be a normal inhabitant of the human intestinal tract.

It is reported that this bacillus may be successfully implanted in the intestinal tract provided a suitable pabulum is provided. It has been assumed that the acidity of putrefactive organisms would be almost entirely suppressed by a change of the flora produced by the administration of milk containing cultures of bacillus acidophilus and that with such implantation, the somewhat hypothetical toxic products charged with harm to the body might also be expected to be suppressed. If indican excretion, however, may be taken as an index of intestinal putrefaction, it now appears that implantation of bacillus acidophlus in the intestine does not lower the putrefactive process.

This suggests that favorable clinical effects produced by the administration of lactose cultures of bacillus acidophilus are not primarily dependent on decreased production of the antecedents of indican (Jour. A. M. A., Jan. 20, 1923, p. 186).

Book Announcements

Nutrition of Mother and Child. By C. ULYSSES MOORE, M. D., M. SC. (PED.). Instructor in Diseases of Children. University of Oregon. Medical School; Medical Director of the Co-operative Infant Welfare Society of Oregon, etc. Including **Menus and Recipes** by MRYTLE JOSEPHINE FERGUSON, B. S., B. S. in H. Ec. Professor of Nutrition, Iowa State College, Ames, Iowa. Philadelphia and London. J. B. Lippincott Company. One of series of Lippincott's Nursing Manuals. Cloth. 1923. 8vo. 234 pages with 33 ilustrations. Price $2.00.

Clinical Laboratory Methods. By RUSSELL LANDRAM HADEN, M. A., M. D., Associate Professor of Medicine, University of Kansas, School of Medicine, Kansas City, Kansas. Formerly Director of Laboratories, Henry Ford Hospital. Detroit. St. Louis. C. V. Mosby Company. 1923. Cloth. 8vo. 294 pages with 69 illustrations. 5 color plates. Price, $3.75.

Impotency, Sterility, and Artificial Impregnation. By FRANK P. DAVIS, Ph. B., M. D., Ex-Secretary Oklahoma State Board of Medical Examiners; Formerly Superintendent State Institution for Feeble-Minded; author of several books. Second Edition, revised and enlarged. St. Louis. C. V. Mosby Company. 1923. Cloth. 12 mo. 168 pages. Price, $2.25.

Navy Adopts Neoarsphenamine.

In accordance with suggestion made by Rear Admiral E. R. Stitt, M. C., U. S. Navy, neoarsphenamine, on account of the simplicity of its technic, has been substituted for arsphenamine on board ships and at stations and smaller hospitals. In the larger hospitals where facilities for the administration of arsphenamine are satisfactory, the choice between the two is left to the discretion of the commanding officer. It is stated that neoarsphenamine is used exclusively in the clinic of the Brady Institute, Baltimore, and Dr. Young and his associates are unable to note any lessened therapeutic efficiency with this drug than when arsphenamine is used.

Pamphlet on Child Labor.

In response to many requests for information regarding the present status of child labor in the United States, the U. S. Department of Labor, through the Children's Bureau, has just issued a brief pamphlet entitled "Child Labor in the United States: Ten Questions Answered." This may be obtained, free of charge, from the Children's Bureau, U. S. Department of Labor, Washington, D. C.

Treatment of Syphilis.

A revised copy of this pamphlet will be sent without cost to any physician addressing The Dermatological Research Laboratories, Philadelphia, or the Abbott Laboratories, Chicago.

Virginia Medical Monthly

FOUNDED BY LANDON B. EDWARDS, M. D., APRIL, 1874.
OWNED BY THE MEDICAL SOCIETY OF VIRGINIA.
PUBLISHED BY THE PUBLISHING COMMITTEE.

A. G. BROWN, Jr., M. D., Chairman, Richmond, Va.
B. R. TUCKER, M. D., Richmond, Va.
P. W. HOWLE, M. D., Richmond, Va.
E. L. KENDIG, M. D., Victoria, Va.
A. L. GRAY, M. D., Richmond, Va.
ALEX. G. BROWN, Jr., M. D., Editor.
G. H. WINFREY, Business Manager and Secretary-Treasurer.
AGNES V. EDWARDS, Editor's Assistant and Assistant Manager.

All correspondence regarding editorial matters, articles, advertisements, subscription rates, etc., should be addressed to the Journal.

All advertisements are received subject to the approval of the Council on Pharmacy and Chemistry of the American Medical Association.

Subscription Price: $2.00 per annum in advance.
Single Copies 20c.

Vol. 49 MARCH, 1923 No. 12

Editorial

Blood Sugar.

"Blood chemistry" is a term that recently has been given considerable prominence in medical literature. This term is generally accepted to mean the study of the metabolic substances circulating in the blood stream. One of the most important of the chemical substances is "blood sugar." The carbohydrates are converted into glucose in the intestines and, as glucose pass through the intestinal wall entering the portal blood. Glucose is stored in the liver as glycogen and is liberated into the blood stream as blood sugar to meet the demands of heat and energy in the body. The absorption of glucose from the carbohydrate meal takes place with varying degrees of rapidity and, therefore, it is subject to considerable variation in the blood during the course of its final distribution. The variations in the normal person after the administration of glucose for testing purposes is interesting. Fitz, as pointed out by Joslin, has emphasized this point. Following the ingestion of 100 grams of glucose, the blood of normal persons may vary in blood sugar, but it is felt that, should the blood sugar in such a case be more than 160 mgms. per 100 c.c. of blood within an hour, or 120 mgms. per 100 c.c. of blood within two hours, it is a condition justifying suspicion of diabetes.

But, by the present day tests, we are not prepared to place too great reliance in the sole examination of the blood sugar, for it is known that certain cases of hyperglycemia have shown little evidence of diabetes for many years. But, blood sugar studies are, nevertheless, of extreme importance and have given clinicians a considerable insight into the problem of dietary management of diabetes and will, no doubt, prove most important in the matter of the use of insulin,—the new product of the isle of Langerhans, discovered and now being experimentally used by the Toronto group and a corps of selected diabetic specialists throughout the country.

When the blood sugar exceeds 16% (160 mgms. per 100 c.c. of blood), sugar passes through the kidney-barrier into the urine. The margin of blood sugar concentration between 16% and 18% and above is very likely invariably to show a glycosuria. And, in the dietary management of diabetes, where blood sugar concentration is so often lapping over the margin of the normal, one has to remember the new findings as to the source of blood sugar. The carbohydrate tolerance now must include not only carbohydrates themselves, but a portion of protein 58%, and fats 10%, in diabetes, serve as a possible source of blood sugar. Sugar may appear in the urine in diabetes, when the blood sugar calculations are as low as .07% and not appear in blood concentrations as high as 0.5%, as Joslin has recently pointed out. But it must be remembered that in the use of fasting or other agents, the lowering of the blood sugar below .07% is dangerous and may bring on extremely grave symptoms in the patient. When the blood sugar values drop below this point, death impends. But it is reassuring to know that the serious condition can be quickly removed by the prompt administration of glucose by the mouth or under the skin.

One patient, in the hands of the writer, recently showed a blood sugar of 584 mgms. per 100 c.c. of blood; this was reduced within three days to 180 mgms. per 100 c.c. of blood, although the patient, an elderly diabetic with chronic nephritis, died of uremic coma.

Comments on Thyroid Diseases.

For a lucid and careful discussion of the diagnosis and treatment of the diseases of the thyroid gland, our readers are urged to read Walter M. Boothby's article, which is now appearing in Volume III, Oxford Loose-Leaf Medicine, beginning on page 883. Every practitioner and family physician should set apart at least a few hours to read this treatise on

goiter. It possesses a clearness and modernness that is enlightening. Much of the work is based upon combined efforts and studies that have been in progress on this important clinical condition at the Mayo Clinic, as well as that culled from the studies of a large number of clinicians elsewhere.

The public propaganda and the interest of the laity in goiter require that the profession shall become thoroughly familiar with up-to-date knowledge on the subject. In making editorial comment, we have used this monograph as a guide and beg to call attention to Plummer's clinical classification of the thyroid diseases:—

1. Diffuse colloid goiter is characterized by the deposits of colloid in acini without symptoms of hyperthyroidism.

2. Adenomatous goiter, without causing constitutional symptoms, produces no alteration in the concentration of thyroxin in the body.

3. Adenomatous goiter with hyperthyroidism is a constitutional disease in which there is maintained an abnormally high and unregulated concentration of thyroxin in the body, producing increased basal metabolic rate and other secondary symptoms.

4. Exophthalmic goiter is a constitutional disease due to an excessive and possibly abnormal secretion from a parenchymatously enlarged thyroid with hyperplasia.

5. Myxedema.

6. Cretinism.

7. Childhood myxedema.

8. Thyroiditis.

9. Malignant diseases of the thyroid.

Colloid Thyroid.

The increase of thyroid gland by colloid enlargement throughout the country probably is due, it is thought, to the fact that there is a deficiency of available iodine in the body.

Diffuse colloid goiter is a symmetrical enlargement of the thyroid characterized pathologically by the deposit of an excess of colloid in the acini and clinically unassociated with signs or symptoms of hyperthyroidism. For this condition, a number of synonyms have been used; adolescent goiter, endemic goiter, simple goiter, the latter being the most common. The territorial distribution of endemic goiter is greatest in the northwest, Great Lake and upper Mississippi regions of this country, though it is found in fair degree of frequency elsewhere. Some states, as Idaho, which has reported 27 cases per 1,000 population, shows the greater incidence while 2 cases per 1,000 population is the ratio of incidence outside of the goiter regions. The deficiency of iodine, as before mentioned, is thought to be the cause of this type of goiter. Food stuffs lacking the iodine content may serve as the cause. The effort of the thyroid to produce thyroxin to meet physiologic requirements in the body without available and adequate iodine explains the deposit of colloid in an over-worked thyroid and gives the clinical enlargement.

This type of thyroid enlargement usually appears about puberty. While it is often the occasion of considerable alarm, both to young women patients and their over-anxious mothers, this type of enlargement may be confidently treated by the internist with assurance of success. These cases are attended by no general or constitutional symptom except such mental ones as are excited by the knowledge of having an enlargement of the gland. No hyperthyroidism or increased basal metabolic rate occurs. These are the cases where an honest statement of the nature of the goiter and its significance will do much to drive away such symptoms of pseudo-hyperthyroidism as may be exhibited. It becomes important in these days of publicity of medical diseases to make clear to patients the true nature of the malady. As to the enlargement of the thyroid in the young girl, an honest profession demands a frank and reassuring statement. The differential diagnosis may have to be made. In goiter, when the basal metabolic rate remains high after repeated readings and after rest in bed, one may be justified in classifying such a case in the hyperthyroid type which means exophthalmic goiter with attending symptoms of tremor, tachycardia, eye signs, nervous and mental symptoms.

Adenomata of Thyroid.

Adenomatous goiter without hyperthyroidism, is not unlike the colloid in its distribution and occurrence. It appears that in these cases there is a development of adenomatous

tissue. It is believed that this is a compensatory enlargement of acini of the gland that has been called upon to over-exert its function in the production of thyroxin on a limited amount of available iodine. Like the colloid type, this gland enlargement is not attended by constitutional disturbances which we know as hyperthyroidism. If the cases go on to advanced age, there may appear evidence of increased thyroxin output. After forty years of age, such symptoms do often appear.

This brings us to comment for a moment upon adenomatous goiter with hyperthyroidism. This is a constitutional disease due to an adenomatous enlargement of the thyroid which is maintaining an abnormally high output and unregulated amount of thyroxin. This causes an increased basal metabolism rate and other secondary symptoms which simulate toxic goiter of exophthalmic variety. But it is to the credit of Plummer that this type of goiter was shown to be different from exophthalmic goiter.

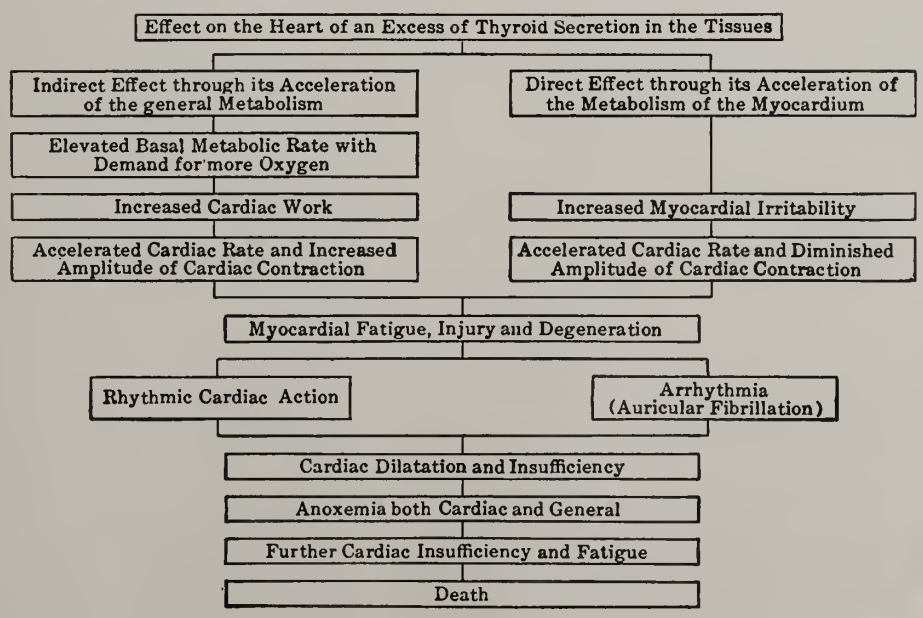
Exophthalmic Goiter.

The names Parry, Basedow, Moebius, Graves, are inseparably linked with exophthalmic goiter. But every enlargement of the thyroid is not a goiter and such a clinical fact must be now understood. "The etiology of exophthalmic goiter and adenomatous or colloid goiter is not a common one. The cause of exophthalmic goiter is as yet unknown, while the cause of colloid or adenomatous goiter is probably due to lack of iodine."

Pathologically, the finding is a diffuse parenchymatous hypertrophy. Plummer is quoted as saying that this is true in 99% of cases. Less than 1% of true exophthalmic goiter shows a mere diffuse colloid condition. These glands show a very low iodine content. The myocardium in 71% of a study of 1,244 consecutive autopsies by Wilson of the Mayo Clinic shows degenerative changes. The cervical sympathetic ganglia also show certain degenerative changes.

Symptomatically, the enlargement of the thyroid gland, the increase of metabolic rate, increased cardiac action, enlargement of the heart, increased appetite, with a loss of weight and strength, the marked evidence of nervous hyperactivity, with definite tremor, bilateral exophthalmus, and, finally, gastro-intestinal crises, stand out in the clinical picture of a case with exophthalmic goiter. In a study of 1,036 patients with exophthalmic goiter, 82% were women. It occurs chiefly between the ages of 20 and 40 years, although it is seen in patients of 49 years and above 50 years. The onset is usually quite sudden and it may appear after some intense nervous or emotional state.

We reproduce an interesting and impressive diagram, recently published in Oxford Medicine, which shows the effect upon the heart.



Good Roads! Goad Roads!! Good Roads!!!

Our readers are entreated not to grow weary but rather to be stimulated to activity by the reiteration of this title, Good Roads! Good Roads!! Good Roads!!! No group of Virginians is more vitally interested in the development of good roads through this Commonwealth than doctors. The problem of good roads' development is a medical one which deeply and crucially affects the doctor himself, his family, his community, his State.

The doctor himself! For many a weary hour has the doctor, whether in the city or country, battled with "Distance." Getting from one place to another, from one patient to another, transporting himself from one sick-bed to another, is one of the biggest jobs in the doctor's life. The doctor cannot deputize an agent to go for him; he must go himhimself. He must travel if he is to serve. He not only must travel, but he must do it ordinarily with reasonable amount of speed, because the element of time enters largely into the type of service he is rendering the public. Often times, it is a vital thing: it bears directly upon the issue of life or death: it enters daily into the surcease from pain and human suffering. It certainly plays an essential part in the doing of one's medical calls in the daily routine. A day's work among the sick, that may be done in a reasonable time, leaving for one's self a fair portion for rest and refreshment, is a day's work devoid of the wear and tear on the body and spirit of the doctor himself. The need for transportation of the doctor himself, with reasonable time, under reasonably favorable conditions, is absolutely dependent upon the maintenance of good roads.

The time element involved in the ease and promptness of calling upon the sick over good roads is one of untold value to the doctor himself. He can, by aid of good roads, travel more quickly, see his patient earlier and oftener. He can, over good roads, see a larger number and cover a wider territory and return home less fatigued.

Doctor, for Heaven's sake, fight for good roads for the sake of the doctor himself!

The Doctor's family: What does ease of transportation over good roads mean to the family of the physician? The family of the physician in rural and country life in Virginia deserves every advantage of ease of travel to or from home. The wife of the country doctor is really too much enslaved to the post of unremitting service by the very nature of her husband's vocation. She is entitled to receive at the hands of the State, in these times of automobile transportation, good roads that are serviceable all the year round. By this, she may at times at her pleasure enjoy the comforts of a motor trip about her neighborhood, to her church, or to some nearby city where she may find pleasure and refreshment. The same is true of the doctor's children. The young school children of the physician are a real part of the good roads' problem . Their physical development is a part of the good roads' development of Virginia. Good roads may save them from danger of some serious malady by enabling the ready visitation of a neighboring physician. Good roads may enable them to attend schools manned by teachers of ability and training. Good roads may afford them opportunity to attend more easily and readily divine worship and keep in close touch with the beneficent influences of the church.

Doctor, fight for good roads for the family's sake!

The doctor's community needs good roads. No one knows this better than the doctor. He knows that the very advantages that will come to himself personally and to his family by the establishment of permanent highways throughout this State will come to every citizen and family of his community. The health, the cultural, the intellectual and religious values of every community are interlinked with good roads in no little degree. The community which the doctor serves professionally is financially affected considerably by the matter of good roads' transportation. It is axiomatic and elementary, but it seems necessary again to affirm that by this means the markets are brought nearer to the farm, that the overhead expense of conveyance of farm products to the centers of population is directly connected with the question of good roads for automobile use.

The doctors of this State should make good roads a matter of state-pride. When one looks at the plans of neighboring states, one is almost ashamed to think that the advantages of good roads soon to be enjoyed by doctors of these states are to be longer denied Virginia doctors. The physicians of Vir-

ginia, whether from the seaside or mountain country, should stand out for good roads. They should preach and urge it wherever they go; in every home and at every fireside they should teach the need of good roads for Virginia. The doctors of Virginia are men all too broad to be provincial in the matter of fearing that one section of the State will fare better than another in the development of good roads, for they know, taking the matter in its broadest sense, that whatever benefits Virginians in Southside Virginia will also benefit Virginians in the Valley and in Southwest Virginia.

News Notes

Federal Department of Health, Education and Welfare.

An editorial on this subject appeared in the February issue of the *Kentucky State Medical Journal*, and tells of a conference held in Washington in January, at the office of General Sawyer. To this were invited representatives of the medical and health professions from all sections of the country. Dr. McCormack, who attended, gives such a full account of the meeting that we present some of the salient features of his editorial:

"General Sawyer, personal representative of the President, stated that it was the present purpose of the committee on reorganization of the Federal departments, to recommend to the Congress the establishment of a Department of Education, Health and Welfare, with a secretary in the cabinet, and an assistant secretary." This Department should consist of four bureaus—education, health, welfare, and the veterans' bureau. It was further proposed to transfer to the new Department all existing activities of the federal government along these several lines, taking over their personnel and functions, and putting them where they can work in harmony. All the other great governments of the world have already done this. It is not the purpose of the new Department to enlarge the federal functions nor to interfere with the full and free exercise of the police powers of the states in these respects. The aim is to simplify and concentrate federal bureaus, thereby increasing the efficiency of every bureau involved and decreasing expense.

This is a subject which has been agitated for many years and has the approval of the present administration. There could be no better time than the present for having it brought up in Congress.

The Tri-State Medical Association of the Carolinas and Virginia

Held its annual meeting at High Point, N. C., February 21 and 22, Dr. S. S. Gale, of Roanoke, Va., presiding. There were approximately 200 members in attendance. A number of interesting papers were read, including those in three symposia on mental diseases, cancer and pneumonia. The social features were enjoyable as usual. Greenville, S. C., was selected as the 1924 place of meeting and the following officers were elected: President, Dr. Chas. O'H. Laughinghouse, Greenville, N. C.; vice-presidents, Drs. D. A. Stanton, High Point, N. C., W. Lowndes Peple, Richmond, Va., and S. B. Sherard, Gaffney, S. C.; secretary-treasurer, Dr. James K. Hall, Richmond (re-elected). The new members elected to the Executive Council are Drs. Fred M. Hodges, Richmond; D. A. Stanton, High Point; and Wm. Robt. Wallace, Chester, S. C. Members of the Council holding over are Drs. J. T. McKinney, Roanoke, Va.; C. O'H. Laughinghouse, Greenville, N. C.; D. L. Smith, Spartanburg, S. C.; F. C. Rinker, Norfolk, Va.; John W. Long, Greensboro, N. C.; George H. Bunch, Columbia, S. C.

The Virginia Society of Oto-Laryngology and Ophthalmology

Will hold its next meeting in Richmond, April 18. Besides a symposium on Refraction and a number of papers by members, four invited guests will present the following papers: Sugar Tolerance in Lens Opacities, by Dr. H. M. Langdon, Philadelphia; Eye Conditions Resulting from Accessory Sinus Infection, by Dr. Walter E. Lambert, New York City; Brain Abscess, by Dr. Wells P. Eagleton, Newark, N. J.; Differential Diagnosis of Labyrinthine and Intracranial Lesions, by Dr. Lewis Fisher, Philadelphia.

Specialists throughout the State who are not members are urged to join. Application blanks may be obtained from the secretary, Dr. E. U. Wallerstein, 114 North Fifth Street, Richmond, Va.

Roanoke Doctors Active for State Meeting.

Roanoke doctors are planning and hoping for the largest meeting in the history of the

Medical Society of Virginia. Immediately following the Norfolk meeting, the Roanoke Academy of Medicine begun to make its plans in an active way and selected committees to take charge of the various activities, with Dr. John O. Boyd as president and Dr. Alfred P. Jones secretary of the General Committee. A full list of the committees and their members was given in our February issue.

Chairmen of the committees are holding regular monthly meetings at luncheon and propose to continue this until the meeting of the Society. The hotels give assurance that they will satisfactorily and comfortably care for the large attendance anticipated. The scientific meeting and exhibits have been arranged for at Hotel Roanoke. Tentative plans include a golf tournament, at a time which will not conflict with scientific meetings, and automobile rides into the lovely country around Roanoke.

Following the plan inaugurated at the Norfolk meeting, the chairman of the Ladies' Entertainment Committee is organizing her subcommittees and will arrange an attrective program to be announced later.

What About the "Super-Nurse"

Is a problem that is at this time being agitated in Michigan. It seems that the Rockefeller Foundation, through the recommendation of its nursing committee, has offered a million dollar endowment to the University of Michigan to have a department of nursing. This would be as separate and distinct a department as the departments of medicine or law and promises to turn out the "super-nurse," one who would be a separate and distinct entity from both the regular graduate nurse and the doctor, and one who would ultimately supplant both the doctor and the practically trained nurse. One journal expresses the idea that the "super-nurse" is "to tell the people when they need medical aid and then call on the doctor for it."

Will Michigan "fall" for the bait offered in this endowment fund?

Ethical Publicity on the part of the Profession.

Dr. J. E. Rush, field director for the American Society for the Control of Cancer, has written a paper in which he emphasizes this need for "ethical publicity on the part of the profession" in enlightening the laity as to the control of cancer. The physician is looked upon as an advisor in health matters, which may affect his clientele. Why not have occasional public meetings of your local societies to inform the layman as to health matters and, among other truths impress the slogan of the American Society for the Control of Cancer—"Early cancer is curable if you will but consult your medical practitioner in time"? Many appreciative patients will be found among those who are saved from untold suffering and perhaps early death, through early advice and proper instruction.

Coue's Visit.

Now that Emile Coue, the druggist of France, has paid America his long heralded visit and returned to his home, his work here may be likened to the sentiment expressed in the verse, "You sieze the flower, its bloom is shed." To those with whom he came in contact he gave the impression of sincerity and earnestness. He waived all claims to being a healer but combined faith and auto-suggestion as the fundamental principles of his cult—if it may so be termed. No doubt, both of these principles would be immensely helpful in many cases, but the great harm from following them blindly would be that many "Coue-ists" would too long defer the evil day for such diseases as might be readily alleviated or entirely corrected if taken in their incipiency.

The U. S. Naval Medical Bulletin,

For December, 1922, is of unusual interest. It gives a report of the International Congress of Military Surgeons and Pharmacists held in Brussels during the summer of 1921. This Congress was for the purpose of summing up practical experiences of the World War in medicine and surgery. In response to the invitation of the King of Belgium, over thirty nations, either allied or associated in the late conflict, or neutral, were represented at the Congress. The *Naval Medical Bulletin* gives an outline of the proceedings of the delegates to the Congress, a digest of the papers presented, and conclusions drawn from the discussions.

So successful was this Congress that it was planned to have another, which will meet in Rome in May, 1923.

Dr. W. B. Richardson,

Recently of Richmond, has located at Arvonia, Va., where he is doing general practice.

Chiropractic Dispensary Closed.

The State Board of Charities of New York City have been upheld by the Attorney General of the State in their recent action compelling the closing of a dispensary opened by chiropractors. This is the second defeat chiropractors have suffered in New York, their first being failure to secure legislation legalizing them in New York. The defeat of this object was greatly aided by Dr. Royal S. Copeland, then Commissioner of Health, but who is now sitting in the U. S. Senate.

Dr. F. E. Booker,

Halifax, Va., was a recent visitor in Raleigh, N. C.

Dr. A. W. Terrell,

Lynchburg, Va., has been spending a vacation in Florida.

The South Carolina Medical Association

Will hold its Seventy-fifth Anniversary Home-Coming meeting in the city of Charleston, April 17th, 18th and 19th, 1923, under the presidency of Dr. C. F. Williams, of Columbia.

It is desired to get in touch with every South Carolina doctor living outside of the State, and every graduate of the Medical College of the State of South Carolina.

Communications may be addressed to Dr. E. A. Hines, Secretary of the South Carolina Medical Association, Seneca, S. C.

Dr. J. Mettauer Williams,

Recently of Rocky Mount, Va., announces his removal to 601 Grandin Road, Roanoke, Va.

Col. William L. Keller, M. C.,

Director of the Surgical Service of Walter Reed General Hospital, Washington, delivered a lecture on "Empyema" before the senior students of the Medical College of Virginia, on March 3. Col. Keller is an alumnus of this college, having graduated there in 1899.

Intensive Campaign Against Tuberculosis.

Dr. W. Nelson Mercer, who is in charge of tuberculosis work of the Richmond Bureau of Health, assisted by Drs. H. R. Edwards and Dean B. Cole, has been holding day and night clinics and giving a course of instruction in diagnosis of pulmonary tuberculosis to the colored physicians of Richmond. This course includes seven periods of one hour each, per week, at the City Tuberculosis Clinic. The demonstrations are practical, patients being brought in from the city sanatoria for actual demonstration and examination by the physicians. The government film on diagnosis of tuberculosis, issued by the Surgeon General of the U. S. Public Health Service, was shown on March 2nd to all colored physicians of Richmond, and they expressed their appreciation of its value by a rising vote of thanks. In addition to the clinics and instruction in diagnosis, several speakers have addressed various colored congregations and organizations throughout the city, to impress upon the people in general the value of early recognition and treatment of pulmonary tuberculosis.

During the month of March, the activities of the campaign are being devoted principally to the colored population of the city. The remainder of the ten weeks' campaign will be given jointly to white and colored.

Dr. William A. Downes,

Of New York City, by invitation, read a paper before the Richmond Surgical Society on March the 6th.

Dr. Stuart McGuire

Was among the speakers at the reunion dinner of the Richmond Chapter of Phi Kappa Sigma Fraternity on the evening of February 26.

The Medical Society of the State of North Carolina

Is to hold its annual meeting at Asheville, April 17, 18 and 19, under the presidency of Dr. John Wesley Long, of Greensboro. Dr. L. B. McBrayer, Sanatorium, is secretary of the Society.

Members of Health Board.

Drs. R. L. Gibbon, Charlotte, and Edgar H. Hand, Pineville, have been appointed members of the Board of Health of Mecklenburg County, N. C.

W. & L. Alumni Officers.

At the annual meeting of the Richmond chapter, Washington and Lee University Alumni, February 22, Dr. J. Morrison Hutcheson was elected president, and Dr. A. A. Houser, a member of the executive committee.

Radium Donated Hospital.

It has been announced through Dr. T. C. Redfern, medical superintendent of City

Memorial Hospital, Winston-Salem, N. C., that a donation has been made to the hospital of a sufficient quantity of radium for use in all cases to which it is applicable in treatment.

Dr. H. U. Stephenson,

Formerly of Toano, Va., but recently of Richmond, has tendered his resignation as a member of the board of governors of the State hospitals.

Honored for Work With X-Rays.

Dr. Charles Vaillant, of the Lariboisiere Hospital, Paris, was on February 19, awarded the Cravate of the Legion of Honor, the Carnegie Hero Medal, and the gold medal of the City of Paris—all rare honors. Dr. Vaillant was one of the first French doctors to apply himself exclusively to the study of roentgen rays, and, as a result of his experimentations, has lost his right arm to the shoulder and the left nearly to the elbow.

Dr. J. C. Bodow,

Hopewell, Va., has been appointed by Governor Trinkle as a member of the Prince George County Board of Health.

Doctors on Chamber of Commerce Committees.

At the annual meeting of the Board of Directors of the Richmond Chamber of Commerce, the last of February, the following local doctors were appointed members of committees for the ensuing year: Drs. J. Shelton Horsley, W. H. Parker, Charles R. Robins and Clifton M. Miller.

Dr. Harry E. Knox,

Formerly of Newport News, Va., has moved to Philadelphia, in which city he is continuing the practice of medicine.

Dr. G. W. Brown,

Superintendent of the Eastern State Hospital, Williamsburg, Va., was a recent visitor in Richmond.

Dr. Douglas D. Martin,

Upon completion of service as an assistant surgeon in the U. S. Navy, located in Tampa, Fla., in 1921, where he is now practising and limiting his work to diseases of children. He graduated from the former University College of Medicine, Richmond, in 1913, at which time he was appointed as one of the internes at Memorial Hospital, this city.

Prof. Roentgen Dead.

The death was announced February 10th, of Professor Wilhelm Konrad Roentgen, discoverer of Roentgen, or as he modesty called them, X-rays. He was nearly 78 years of age, having been born March 27, 1845, at Lennep, near the Ruhr district. After serving as professor of physics at various German universities, he went to Wurzburg, where in 1895 he made the discovery for which his name is chiefly renowned. He retired from teaching at the age of 75, his last post being the chair of experimental physics at Munich. He received the Nobel prize in 1900. His body was cremated.

The Clinical Society of Genito-Urinary Surgeons,

At their annual meeting held recently in Chicago, elected Dr. E. L. Keyes, Jr., New York City, president, Dr. Hugh H. Young, Baltimore, vice-president, and re-elected Dr. William C. Quinby, Boston, secretary-treasurer.

Wise County Jail Clinic.

The board of supervisors of Wise County, Virginia, has made appropriation for a jail clinic for treating delinquent prisoners affected with social diseases. Only two other jails in the State are reported to have such clinics, these being in Richmond and Norfolk. Dr. W. R. Culbertson, Coeburn, is in charge of health work in Wise County and co-operates closely with the State Health Department in all matters affecting the health of that community.

Dr. George G. Crawford,

Strasburg, Va., of the class '01, University of Virginia, Medical School, in addition to his skill as physician, has recently demonstrated his ability in a literary way. In response to an announcement from the University of Virginia Alumni Association, of the launching of a song contest, he submitted a poem which received the prize.

Attend Educational Meetings.

Dr. Manfred Call, dean of the Medical School of the Medical College of Virginia, and Dr. Theodore Hough, dean of the Medical School of the University of Virginia, were among those attending the Association of American Medical Colleges and the Council on Medical Education of the American Medical Association, at Ann Arbor, Mich., early this month.

Lt. Summers Transferred from Richmond.

Lt. Toson O. Summers, M. C., has been transferred by the U. S. Navy Department from duty at the navy recruiting station in Richmond, to duty in connection with the fitting out of the United States ship Richmond, to which he is assigned when the ship is commissioned.

Dr. W. B. Carr

Has returned to his home in Warrenton, Va., after a short stay in Washington, D. C. and New York.

Base Hospital 45 Holds Reunion.

Base Hospital No. 45, Veterans' Association, better known in this section as "The McGuire Unit," held its third annual reunion in Richmond February 28. Dr. W. Lowndes Peple was toastmaster at the dinner, which was followed by a business session. Among the speakers at this meeting were Drs. R. C. Fravel, F. M. Hodges, P. V. Anderson and Greer Baughman.

Piedmont Sanatorium to Have Children's Pavilion.

A meeting of the Piedmont Sanatorium committee, of which Dr. William F. Drewry, of Petersburg, is chairman, was held at the offices of the State Department of Health in Richmond, the middle of February, and contract was awarded for the building of a children's pavilion at Piedmont Sanatorium, as provided for by the last session of the legislature. An appropriation of $20,000 was made for this addition. Work will be commenced in a short time. Piedmont Sanatorium is the State Institution which cares for colored tuberculous patients and is located at Burkeville, Va.

The Virginia Conference of Social Work

Will hold a three day's meeting in Charlottesville, beginning April 22. Lewis Brownlow, city manager of Petersburg, is president. An interesting program has been arranged, which will include several noted speakers from a distance.

Blue Ridge Sanatorium to Have New Buildings.

Work will shortly be started on four new buildings at Blue Ridge Sanatorium, located near Charlottesville, Va. This is the newest of the State's tuberculosis sanatoria and is ideally situated in the foot hills of the Blue Ridge Mountains.

Dr. U. G. Jones,

Johnson City, Tenn., announces the opening of Jones Eye, Ear, Nose and Throat Hospital in Preas Building, on West Market Street. This will be thoroughly modern and will have a charity ward and also a free clinic each Monday and Friday from 1 to 2 P. M. Dr. Jones is a member of the Medical Society of Virginia, having formerly lived at Marion, Va.

Dr. H. Aulick Burke,

Upon completing his term of service as a medical officer in the U. S. Navy, located in Monroe, N. C.

Dr. Carroll Edward Foley,

Recently of Lovettsville, Va., announces the opening of his offices at 1720 M Street, Northwest, Washington, D. C. He will limit his practice to diseases of the eye, ear, nose and throat.

Dr. I. H. Goldman,

Of Richmond, a first lieutenant in the Officers' Reserve corps, has been assigned to the medical personnel of the 318th Infantry, Eightieth Division.

Officers of Westmoreland Club.

Dr. Beverley R. Tucker has been re-elected vice-president of Westmoreland Club, Richmond, for another year, and Dr. J. McCaw Tompkins has been named one of the new members of the board of governors.

Dr. L. O. Vaughan,

Waverly, Va., was among the doctors who attended the meeting of the Grand Lodge of A. F. & A. M., in Richmond, early in February.

Bequest to Johns Hopkins University.

Announcement was recently made through the *Baltimore American* of a bequest of $5,000,000 to Johns Hopkins University by the Carnegie Foundation of New York. It was stated that one of the aims of the gift was the erection of a seven-story building, which will combine a modern dispensary and other features as a unit of the Hopkins medical group.

Dr. and Mrs. Giles Cook,

Of Front Royal, Va., have been recent visitors in Richmond.

Dr. W. E. Fahrney,

Timberville, Va., was hurt in an automobile accident recently when rushing to his ill child. He regained consciousness after a short time

and apparently suffered little from the accident.

Are You Going to the California A. M. A. Meeting?

If so, why not write Dr. W. E. Musgrave, at Convention Headquarters, 808 Balboa Building, San Francisco, and secure information about the various trips which may be taken from San Francisco? His committee will answer any inquiry about any subject. A number of attractive trips to last from a few days to several weeks, have been planned. One of the trips suggested for those from the Eastern part of the United States is through Panama Canal by boat. Motor trips in single cars or small parties would also form a pleasant way of travelling for those who can spare the time.

The dates of the meeting are June 25 to 29. Extend your vacation time to see some of the many points of interest in the West.

Building at Johns Hopkins.

The new building for the school of hygiene and public health of Johns Hopkins University is in course of construction and is to cost $1,000,000. Work on construction of other medical buildings is also progressing well.

Charlotte, N. C., Has Orthopedic Clinic.

In conjunction with the work of the Health Department, an orthopedic clinic has been opened in Charlotte, N. C. It is in charge of Dr. Alonzo H. Myers, who gives his services gratis.

Dr. and Mrs. Thos. P. West,

Bedford, Va., have returned home after spending some time in Florida.

Dr. P. M. Chichester,

For some time medical inspector for the Richmond Bureau of Health, resigned this position to accept a commission with the State Department of Health, effective March 1. He will have charge of health work in Loudoun County, Virginia, under the auspices of the State Department of Health, and will be stationed at Leesburg.

Dr. A. M. Showalter,

Cambria, Va., attended the annual meeting of the Grand Lodge of A. F. and A. M., in Richmond, in February, and visited several places in the eastern section of the State before returning home.

Danville Plans New General Hospital.

With the bequest of $250,000 left the Danville, Va., General Hospital, by the will of the late John E. Hughes, it is planned to erect a new building. It is likely that the present hospital will be sold and a new site selected for a thoroughly modern and up-to-date institution in some other part of the town.

Dr. E. C. Levy,

Director of Public Welfare, Richmond, returned the latter part of February from New York City, where he attended a meeting of the executive committee of the American Public Health Association, of which Association he is president.

Fire at New York Hospital for Insane.

On February 18, one of the buildings of the Manhattan State Hospital for Insane, Ward's Island, New York, was destroyed by fire, and twenty-four inmates and three male attendants lost their lives. The building destroyed housed seventy-five of the most violent patients—those with homicidal tendency—and great praise is due the attendants for their excellent work in rescuing the number of patients.

Married.

The marriage has just been announced of Dr. Thomas Dewey Davis, Richmond, Va., and Miss Willie Evelyn Owens, Marion, S. C.

Dr. Robert Minor Baker,

Of the class of '18, Medical College of Virginia, is located and practising in Jacksonville, Fla.

National Negro Health Week

Will be celebrated this year from April 1 to 7. As a result of better health and housing conditions among the negroes, their death rate has been materially decreased, especially in the Southern states. These figures indicate that the American negro is not necessarily short lived nor especially liable to disease. Interested organizations are urged to get in touch especially with those negroes who have not yet learned of the benefits to be derived from an adherence to the laws of health and hygiene.

Dr. G. B. Dudley, Jr.,

Who has been in Danville, Va., for the past four years, associated with Dr. T. W. Edmunds in eye, ear, nose and throat practice, left the first of March for New York, where he expected to attend clinics and get equip-

ment for his new office, which he expects to open in Burch Building, Martinsville, Va., the 1st of April. Dr. Dudley will limit his work in Martinsville to the same specialty.

National Hospital Day

Will be celebrated again this year on May 12. Suggestions for programs and other information may be secured from the secretary, Matthew O. Foley, 537 South Dearborn Street, Chicago.

Dr. Charles R. Woolwine,

Davy, W. Va., is this year's president of the McDowell County (W. Va.) Medical Society. Dr. Woolwine is a member of the '08 class, Medical College of Virginia.

Are You Reporting Births in Your Practice?

A preliminary summary of births in Virginia for the year 1922, showed 5,298 less than in 1921. Delayed reports may reduce this number somewhat, but there will still be a decline from previous years. Doctor, in justice to the child in future years, will you please see that all births in your practice are recorded promptly?

Bulletin on Vitamins.

A new bulletin on Vitamins may be obtained by addressing the U. S. Department of Agriculture, Washington, D. C. Although meat had been assigned a rather low value as a source of vitamins, experiments made by the U. S. Department of Agriculture show that various kinds of lean meat and the edible organs of cattle, sheep and hogs have been found to contain varying quantities of vitamin B, also known as the antineuritic vitamin. Certain of the internal organs, particularly the heart, liver and kidney, are relatively rich in the three vitamins A, B and C. The lean meat of pork contains a much larger proportion of Vitamin B than beef. Those interested in vitamins will wish to see the bulletin.

Wanted.

A physician to locate in a very promising community. Address P. O. Box 141, Millboro, Va.—(Adv.)

Wanted Drug Clerk.

Young man for a small town drug store, operated by a doctor. Rare opportunity for a hustler with some drug store experience. No cash necessary, but would prefer small investment in the business and, if satisfactory relations, could take over the management. Address "Hustler," care Virginia Medical Monthly.—(Adv.)

Obituary

Dr. Tunis C. Quick,

Surgeon in the U. S. Public Health Service, but formerly of Falls Church, Va., died suddenly February 20, while on a visit at the home of his sister at Falls Church. Dr. Quick was born in Loudoun County, Va., 52 years ago and studied medicine at Columbian (now George Washington) University, Washington, from which he graduated in 1895. He joined the Medical Society of Virginia in 1901 and took an active interest in its work, being elected one of the vice-presidents in 1905 and serving as a councilor from 1908 to 1910. Dr. Quick entered the medical reserve corps of the army at the beginning of the World War, with the rank of lieutenant colonel and, upon completion of this service, entered the U. S. Public Health Service. He was a Knight Templar and was an enthusiastic member of numerous medical and fraternal organizations. Following services at the Baptich church in Falls Church, the body was carried to Arlington where interment was made with full military honors. The services there were conducted by the Army chaplain, the Legion chaplain and the Masons. Dr. Quick is survived by his wife.

Dr. Walter Were Rangeley,

Of Christiansburg, Va., died at his home in that place March 4. He was born at Stuart, Va., 55 years ago and studied medicine at the University of Maryland, Baltimore, from which he graduated in 1896. He had been a member of the Medical Society of Virginia since 1901 and was one of the prominent doctors of that section. Dr. Rangeley was for fifteen years a member of the Montgomery County Board of Health. He is survived by his wife and three children.

Dr. Fenton M. Nichols,

A prominent physician of Loudoun County, died at his home at Purcellville, Va., February 17, after a short illness with pneumonia. He was a native of Loudoun County and was sixty-two years of age. He graduated in medicine from the former New York University, Medical College, in 1885. Dr. Nichols was a member of the local and State medical societies. His wife survives him.

Dr. James M. Raby,

One of the leading physicians of Isle of Wight County, died February 28, at his home in Windsor, Va. He was about 60 years of age and graduated from the University of Louisville, Medical Department, in 1885. He was prominently identified with the business and professional interests of his community and was one of the founders and, at the time of his death, president of Farmers' Bank of Windsor. Dr. Raby had been a member of the Medical Society of Virginia for a number of years. His wife survives him.

Resolutions on Death of Dr. Roy.

The following was adopted at a meeting of the Richmond Academy of Medicine and Surgery, held on the 13th ultimo:

Dr. James P. Roy, a practising physician and a member of the Richmond Academy of Medicine and Surgery, died at his home in this city on January 25, 1923, at the age of 61 years.

He was born in Fort Leavenworth, Kansas, and was the son of Colonel James P. Roy and his wife, Mrs. Kate L. Bridges Roy, both being members of old Virginia families. At twelve years of age, he came to Richmond to enter McGuire's school, and, later, he attended Pampatike Academy, in King William County, Va., where he graduated in 1880, distinguishing himself by standing the first in his class. In the same year he entered the University of Virginia and graduated with high honors in senior Latin, French, mathematics, history, literature, physics and chemistry, and in 1884 received his M. D. degree. The next two years were spent in the Emergency Hospital of Washington, D. C., where he gained a wide experience. In 1886, he located in Richmond for the practice of his profession. He became connected with the Medical College of Virginia and taught and demonstrated anatomy, and, later, taught orthopedic surgery in the same institution. In addition to being a member of this organization, he was a member of the Medical Society of Virginia and of the American Medical Association.

Dr. Roy always manifested a deep interest in his chosen profession, was of a modest and unassuming disposition, always courteous and gentle in his manner, and endeared himself to a large clientele. He leaves to mourn him, his wife, Mrs. Beulah Meyer Roy.

The Richmond Academy of Medicine and Surgery hereby expresses its appreciation of his qualities as a man and physician, and directs that this sketch be placed in the minutes, that a copy be sent his wife, and that it be published in the VIRGINIA MEDICAL MONTHLY.

(Signed)
CHAS. R. ROBINS,
MANFRED CALL,
CLIFTON M. MILLER.

Dr. Charles Elliott Stafford.

We were only recently notified of the death on June 24, 1922, of Dr. C. E. Stafford of Eggleston, Va. He was operated on about four years ago for gall-stones and had apparently been in better health until the day prior to his death. He was about 70 years of age and graduated from the former College of Physicians and Surgeons, Baltimore, in 1875.

Dr. John R. Couch,

Richmond, Va., died at his home in this city, March 2. He was a native of Oxford, N. C., and fifty-four years of age. He studied medicine in Baltimore, after which he located in Lunenburg County, Va., where he practiced until he moved to Richmond, about two years ago. He was a member of the Medical Society of Virginia. He is survived by his wife and ten children.

Dr. James J. Wingard,

Of Lexington, S. C., died December 4, at the age of 58 years. He was a graduate of the Medical School of the University of Virginia in 1895.

Dr. Orville Nalle,

Elkwood Va., died February 18, after a short illness from a stroke of paralysis, which came as a climax to a period of ill health dating back for more than a year. Dr. Nalle graduated in medicine from the University of Virginia in 1884, and was formerly a member of the Medical Society of Virginia. He is survived by his wife and several children.

Dr. Marvin Le Roy Smoot

Died at his home in Fayetteville, N. C., Febraury 6, after a long illness. He was forty-six years of age and graduated from the former University College of Medicine, Richmond, in 1903. He was one of the prominent eye, ear nose and throat specialists of North Carolina.

Dr. John Robert Lee Hardesty

Died February 5, at the home of his son in Washington, D. C. He was born in Harrisonburg, Va., 87 years ago, and graduated in medicine from Jefferson Medical College, Philadelphia, in 1856. He was active in the Confederate service during the war between the States, and later practiced in Virginia until 1885, when he moved to Washington and specialized in diseases of the ear and throat until his retirement on account of age.

MAY 18 1922

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., October, 1922

VOL. 49, NO. 1
WHOLE NO. 838

RICHMOND, VA., APRIL, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Practical Suggestions for Stricter Cleanliness in Surgery. Southgate Leigh, M. D., F. A. C. S., Norfolk, Va. 1

Blood Pressure in Pregnancy. J. N. Upshur, M. D., Richmond, Va. 3

Cancer Propaganda. John Wesley Long, M. D., F. A. C. S., Greensboro, N. C. 5

Rectal Onanism—With Report of a Case. Arthur D. Ownbey, M. D., Newport News, Va. 9

The Spleen in Surgery. Carrington Williams, M. D., Richmond, Va. 10

Report of a Cast of Siamese Twins. Joseph D. Collins, M. D., F. A. C. S., Portsmouth, Va. 14

Uterine Fibroid Treated With Radium. Joseph J. Mundell, M. D., Washington, D. C. 14

Reflections on Medical Ethics. Davis Furman, M. D., Greenville, S. C. 15

The Diagnostic Value of Analysis of the Urine. A. I. Dodson, M. D., and O. O. Ashworth, M. D., Richmond, Va. 22

Acute Anterior Poliomyelitis. Littleton Davis, M. D., Roanoke, Va. 25

Acute Perforation of Duodenal Ulcer. George H. Bunch, M. D., Columbia, S. C. 27

Some Observations on Surgery of the Chest During Twenty-Six Months in the Military Service. J. Coleman Motley, M. D., F. A. C. S., Abingdon, Virginia 30

The Surgical Treatment of Trigeminal Neuralgia. Addison G. Brenizer, M. D., Charlotte, N. C. 33

Duodenal Ulcer and Cholecystitis. Warren T. Vaughan, M. D., Richmond, Va. 34

Paresis. J. T. A. Wright, Nashville, Tenn. 38

ANALYSES, SELECTIONS, ETC. 39
SECRETARY'S ANNOUNCEMENT 41
THE TRUTH ABOUT MEDICINE 42
BOOK ANNOUNCEMENTS 42
EDITORIAL 43
NEWS NOTES 46
OBITUARY RECORD 52

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

"CREOSOTE and * * * * are used internally as intestinal and urinary antiseptics, as stimulant expectorants and in the treatment of tuberculosis. Their local irritant actions often interfere with their internal administration." (New and Non-official Remedies, 1921, p. 89.)

CALCREOSE is a mixture containing in loose chemical combination approximately equal weights of creosote and lime (calcium creosotate.)

CALCREOSE administered internally has the same actions and uses as creosote, but does not readily produce gastric distress, nausea and vomiting even when large quantities are taken for comparatively long periods of time.

CALCREOSE may be given in the form of solution or tablets.

Write for Samples and Literature

THE MALTBIE CHEMICAL CO., Newark, New Jersey

American Medical Association

ST. LOUIS, MAY 22nd to 26th
Inclusive

The Chesapeake and Ohio Railway will operate a SPECIAL TRAIN

from Richmond to St. Louis, leaving Richmond, Monday, May 22nd at 7 p. m., arriving at St. Louis the following evening about 9 o'clock.

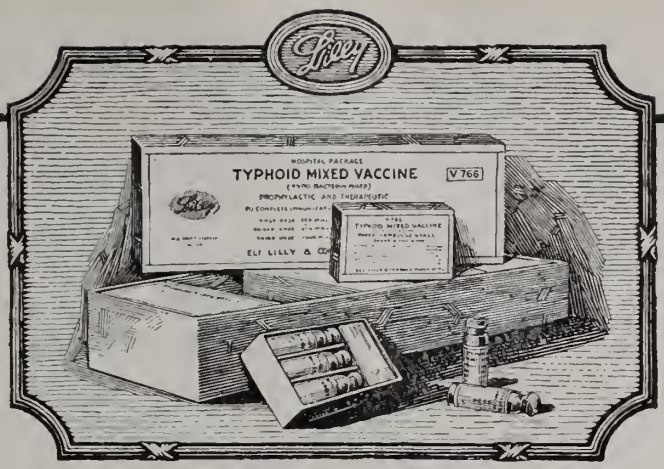
This offers the physicians an unusual opportunity to enjoy the magnificent Mountain Scenery of Virginia and West Virginia and along the Kanawha River.

A MINIMUM OF 125 TICKETS

must be sold to insure the operation of this train. It will take care of those physicians going from Virginia, North Carolina, District of Columbia and West Virginia. Passengers from southern Virginia and North Carolina may connect with this train either at Charlottesville or Richmond. Notify the office of the Medical Society of Virginia, 104½ W. Grace St., Richmond, Va., not later than May 10th, if you want reservations made.

Round trip rates not including Pullman accommodations or meals:

Richmond, Va.	$49.92	Greensboro, N. C.	$50.09
Baltimore	48.81	Charlotte, N. C.	55.16
Washington	48.81	Rocky Mount, N. C.	54.48
Norfolk, Va.	54.33	Wilson, N. C.	54.48
Newport, News, Va.	53.97	Fayetteville, N. C.	55.25
Petersburg, Va.	49.92	Goldsboro, N. C.	54.48
Lynchburg, Va.	44.05	Wilmington, N. C.	55.92
Charlottesv lle, Va.	44.72	Norlina, N. C.	51.89
Staunton, Va.	42.57	Henderson, N. C.	51.89
Danville, Va.	47.48	Raleigh, N. C.	51.89



Now Is the Time to Immunize Your Patients

The season of *Vacation Typhoid* is with us. Physicians should urge vaccination against typhoid *now*. Vaccination is simple and safe. Its effectiveness is unquestioned. It should be advocated generally as a protective measure.

Specify "Lilly" Typhoid and Typhoid Mixed Vaccines. They are potent and reliable. Supplied through the drug trade in ampoule vials and syringe packages to meet all requirements.

Send for Further Information

ELI LILLY & COMPANY
Indianapolis, U. S. A.

The Management of an Infant's Diet

Diarrhea of Infants

Three recommendations are made—

Stop at once the giving of milk.
Thoroughly clean out the intestinal tract.
Give nourishment composed of food elements capable of being absorbed with minimum digestive effort.

A diet that meets the condition is prepared as follows:

Mellin's Food . .	**4 level tablespoonfuls**
Water (boiled, then cooled) . .	**16 fluidounces**

Feed small amounts at frequent intervals.

It is further suggested:—As soon as the stools lessen in number and improve in character, gradually build up the diet by substituting one ounce of skimmed milk for one ounce of water until the amount of skimmed milk is equal to the quantity of milk usually given for the age of the infant; also that no milk fat be given until the baby has completely recovered.

Mellin's Food Company, Boston, Mass.

SUMMER WEARABLES

Berry Tropical and Palm Beach Suits are tailored to look good as well as give comfort.

No uncertainties here—the *Berry Label* guarantees.

$17.50 and up.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 **Surplus Earned $900,000**

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va.

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., October, 1922

VOL. 49, NO. 2
WHOLE NO. 839.

RICHMOND, VA., MAY, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Lung Abscess: With Report of Cases. Joseph T. Buxton, M. D., F. A. C. S., Newport News, Va. 53

Remarks About Head and Other Pains Due to Nasal Irritation. Jos. A. White, M. A., M. D., Richmond, Va. 61

An Electrotherapeutic Misconception.—The Sinusoidal Current. Charles A. Pfender, M. D., Washington, D. C. 65

Silent Stones. W. Lowndes Peple, M. D., F. C. S., Richmond, Va. 70

Gall-Bladder Disease. William Earl Clark, M. D., and Matthew W. Perry, M. D., Washington, D. C. 74

Surgical Significance of Pain in the left Side of Abdomen. R. L. Pittman, M. D., Fayetteville, N. C. 81

Report of Case of Melanotic Sarcoma of the Choroid. Courtney Edmond, M. D., D. D. S., Clifton Forge, Va. 84

A Plea For Greater Effort in the Conservation of Hearing in Acute Diseases of the Middle Ear and Mastoid. E. W. Perry, M. D., Lynchburg, Va. 85

The Relation of Modern Dentistry to the Practice of Medicine. Guy R. Harrison, D. D. S., Richmond, Va. 88

Citizenship and the Physician. E. L. Kendig, M. D., Victoria, Va. 91

Home Treatment of Tuberculosis. R. L. Raiford, M. D., Sedley, Va. 93

Chronic Endocervicitis. E. W. Titus, M. D., Washington, D. C. 96

The Appendicular Liver and Kidney With Report of Cases. Lewis H. Swindell, B. S., M. D., Washington, N. C. 98

CORRESPONDENCE 100
SECRETARY'S ANNOUNCEMENT 101
ANALYSES, SELECTIONS, ETC. 101
THE TRUTH ABOUT MEDICINE 102
BOOK ANNOUNCEMENTS 102
EDITORIAL 103
NEWS NOTES 104
OBITUARY RECORD 112

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

"CREOSOTE and * * * * are used internally as intestinal and urinary antiseptics, as stimulant expectorants and in the treatment of tuberculosis. Their local irritant actions often interfere with their internal administration." (New and Non-official Remedies, 1921, p. 89.)

CALCREOSE is a mixture containing in loose chemical combination approximately equal weights of creosote and lime (calcium creosotate.)

CALCREOSE administered internally has the same actions and uses as creosote, but does not readily produce gastric distress, nausea and vomiting even when large quantities are taken for comparatively long periods of time.

CALCREOSE may be given in the form of solution or tablets.

Write for Samples and Literature

THE MALTBIE CHEMICAL CO., Newark, New Jersey

LOESER'S INTRAVENOUS SOLUTIONS

Have made possible the rapidly increasing employment of Intravenous Medication.

They are controlled by chemical, physical and biological tests, to conform to definite high standards.

They permit direct medication with U. S. P. and standard remedies of established therapeutic value.

Clinical Reports, Reprints, Price Lists and "The Journal of Intravenous Therapy" will be sent to any physician on request

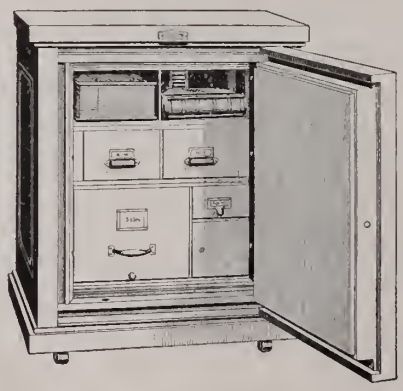
New York Intravenous Laboratory
100 West 21st Street
New York, N. Y.

Producing ethical intravenous solutions for the medical profession exclusively.

Are your Records and Valuable Instruments Safe from Fire?

Every physican and surgeon has many valuable records that should be protected from fire — patients' history cards, copies of prescriptions, valuable instruments, drugs, materials, record of operations, research data and other papers of a more or less personal nature.

THE SAFE-CABINET
"The World's Safest Safe"



has protected its contents in severe conflagrations and in scientific laboratory tests.

The Safe-Cabinet No. 12, shown here is especially suited to the physician, surgeon and dentist. It is also in much demand for use in hospitals. It can be furnished in the standard finish of olive green, and in white enamel, oak, mahogany or other special finishes

E. W. FETZER
Broadway National Bank Building
Phone Madison 207 Richmond, Virginia

Group Allergens Squibb

The importance of testing patients with a large number of different proteins has emphasized the need for combining into a series of group allergens, a number of the closely allied individual ones.

In cooperation with Dr. W. W. Duke, a series of 27 such groups have been developed for diagnostic purposes, each mixture, with but few exceptions, containing five allergens, and the endeavor has been to group them on the basis of actual clinical observation.

These group mixtures materially lessen the number of tests required and makes it possible to test each patient with a larger number of proteins with less inconvenience and in shorter time than would otherwise be involved.

The following groups are now available:

Vegetables (5)	Fruits (3)	Nuts (2)	Cereals
Meats (2)	Fowl	Fish (2)	Mollusks (2)
Condiments	Beverages	Egg and Milk	Hair and
Feathers	Pollens (2)	Bacterial (3)	Dander (2)

Thyroxin

Prepared Under License of the University of Minnesota.

Pure Crystalline Thyroxin is the physiologically active constituent of the thyroid gland; a compound of definite and known chemical composition containing 65% of iodine, organically combined as an integral part of the molecule.

Fifteen grains of desiccated thyroid prepared under favorable conditions contains approximately 1/64 grain of Thyroxin.

Thyroxin is marketed in two forms—Tablets containing the partially purified sodium salt for oral administration, and the Pure Crystalline Thyroxin for intravenous administration in cases where the product is not absorbed quantitatively when given by mouth.

Complete information on request

E·R·SQUIBB & SONS

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

RELIABILITY
UNIFORMITY
PURITY
EFFICACY
E.R. SQUIBB & SONS

SUMMER WEARABLES

Berry Tropical and Palm Beach Suits are tailored to look good as well as give comfort.

No uncertainties here—the *Berry Label* guarantees.

$17.50 and up.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va.

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., October, 1922

Vol. 49, No. 3
WHOLE NO. 840

RICHMOND, VA., JUNE, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:
Work of the State Board of Health. Ennion G. Williams, M. D., Richmond Va. 113
Syphilis of the Inner Ear and Eighth Nerve. George W. Mackenzie, M. D., Philadelphia, Pa. 120
X-ray in Dermatology. C. Augustus Simpson, M. D., Washington, D. C. 122
Rambling Remarks in Re Appendicitis. Stuart McGuire, Richmond, Va. 125
On the Nature and Treatment of Hemorrhagic Fever. Cyrus Thompson, M. D., Jacksonville, N. C. 127
Transuterine Pneumoperitoneum. Joseph J. Mundell, M. D., Washington, D. C. 130
Digitalis in the Treatment of Cardiac Decompensation. L. E. Stubbs, M. D., Elizabeth Buxton Hospital, Newport News, Va. 132
The Trend of the Healing Art. Alfred B. Greider, M. D., Rural Retreat, Va. 135
The Management of Normal Labor and the Puerperium. A. M. Showalter, M. D., Cambria, Va. 136
Pericarditis With Effusion. Wm. B. Porter, M. D., Roanoke, Va. 140
Sarcoma of the Long Bones. Jas. W. Gibbon, M. D., Charlotte, N. C. 142
The Advantages and Methods of Making Labor Easy. Ivan Procter, M. D., Raleigh, N. C. 147
The Submerged Tonsil. D. L. Rawls, M. D., Suffolk, Va. 150
Brief Remarks on Sinusitis, with Report of Case. N. J. Gouid, M. D., Norfolk, Va. 151
Venereal Disease from the Army Standpoint. M. C. Sycle, M. D., Richmond, Va. 155
Acute Appendicitis—Acute Salpingitis—Acute Pyelitis Differential Diagnosis. Frank D. Worthington, M. D., Charlotte, N. C. 158
The Relation of the General Practitioner to Venereal Diseases. James A. Keiger, M. D., Greensboro, N. C. 160
Hydrops Dyspnea not Relieved by Aspiration. Alexander G. Brown, Jr., M. D., Richmond, Va. 161
PUBLIC HEALTH 162
PROCEEDINGS OF SOCIETIES 163
SECRETARY'S ANNOUNCEMENT 164
THE TRUTH ABOUT MEDICINE 164
BOOK ANNOUNCEMENTS 164
EDITORIAL 165
NEWS NOTES 167
OBITUARY 173

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

CALCIUM IN INTESTINAL TUBERCULOSIS

"The administration of calcium chlorid in tuberculous diarrhea is, we believe based on empiricism, but of its good effects there are at present many undeniable examples. . . . We have used calcium chlorid in no sense as a curative agent, but merely as a palliative in an attempt to control the distressing symptoms of pain and diarrhea."—P. H. Ringer and C. I. Minor, Am. Rev. Turbec. 5:876 (Jan.) 1922.

CALCREOSE (calcium creosotate) is a mixture containing in loose chemical combination approximately equal parts of creosote and lime.

CALCREOSE has the same actions and uses as creosote but is free from its untoward effects on the stomach. Creosote is used as an intestinal antiseptic.

Write for Samples and Literature

THE MALTBIE CHEMICAL CO., Newark, New Jersey

Your Prescriptions for Glasses Should be Filled

Hall's Way

REALLY IT'S THE BEST WAY

211 E. Broad St.
and
503 E. Franklin St.
(Professional Bldg.)
Richmond, Va.

G·L· Hall
OPTICAL CO. INC.

144-146 Granby St.
112 W. Plume St.
122 Randolph St.
Norfolk, Va.

THE LARGEST AND BEST KNOWN OPTICAL AND KODAC HOUSE IN THE ENTIRE SOUTH.

SPECIALISTS IN

X-Ray Plates, Powders, Etc.
Dental Film
Buck's X-Ograph Film
Dental Mounts
Photographic Chemicals, Etc.

GRINDERS OF

Ultex Lenses
Kryptok Lenses
Toric Lenses
Tinted Lenses, Etc.

SPECTACLES
EYEGLASSES
Artificial Eyes

KODAKS
SUPPLIES
FINISHING

The S. Galeski Optical Co.

LEADING—LARGEST—OLDEST
OPTICAL HOUSE SOUTH

RICHMOND
Main and 8th Streets
223 E. Broad St.

NORFOLK
209 Granby Street

ROANOKE
211 S. Jefferson Street

DANVILLE
520 Main Street

℞ WORK
OUR
SPECIALTY

OPHTHALMO-
LOGICAL
SUPPLIES

THYROXIN

Prepared only by E. R. SQUIBB & SONS

Under License of the

University of Minnesota

PURE, crystalline Thyroxin is the physiologically active constituent of the thyroid gland; a compound of definite and known chemical composition containing 65 per cent. of iodine, organically combined, as an integral part of the molecule.

Fifteen grains of desiccated thyroid prepared under favorable conditions contains approximately 1/64 grain of Thyroxin. This ratio may be used in determining the initial dose of Thyroxin.

The physiological action of Thyroxin bears a quantitative relation to the production of body energy, and a system that is lacking in such energy may be brought up to normal production by its administration.

Thyroxin is marketed in two forms—Tablets containing the partially purified sodium salt of Thyroxin for oral administration; and the Pure Crystalline Thyroxin for intravenous injection in those cases in which the Thyroxin is not absorbed quantitatively when given by mouth.

Complete Information on Request.

E·R·SQUIBB & SONS, NEW YORK

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

SUMMER WEARABLES

Berry Tropical and Palm Beach Suits are tailored to look good as well as give comfort.

No uncertainties here—the *Berry Label* guarantees.
$17.50 and up.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 **Surplus Earned $900,000**

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK
11th & Main Sts. Richmond, Va.

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., October, 1922

Vol. 49, No. 4
WHOLE No. 841

RICHMOND, VA., JULY, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Primary Carcinoma of the Gall-Bladder. Stephen H. Watts, M. D., F. A. C. S., University, Va. 175

Surgical Treatment of Facial Paralysis. C. C. Coleman, M. D., F. A. C. S., Richmond, Va. 180

Protein Sensitization in Bronchial Asthma, Hay-Fever and Allied Conditions. With Report of Writer's Own Case. Grafton Tyler Brown, M. D., Washington, D. C. 188

Pnuemonia.—Etiology and Diagnosis. Paul Davis, M. D., Roanoke, Va. 193

Symptomatology and Treatment of Pnuemonia. George B. Lawson, M. D., Roanoke, Virginia. 195

Some Phases in the Treatment of Pneumonia. G. G. Howery, M. D., East Radford, Va. 199

Hernia of the Liver and Intestines in the New Born. Estill L. Caudill, M. D., Narrows, Va. 201

Sub-Mucous Ulcer of the Bladder.—Report of Cases Treated by Excision. T. J. Hughes, M. D., Roanoke, Va. 202

Treatment of Diphtheria. T. K. McKee, M. D., Saltville, Va. 203

Some Remarks on Technique in Mixing and Administering Salvarsan. John J. Giesen, M. D., Radford, Va. 206

Empyema of the Maxillary Sinuses, Secondary to Extraction of Teeth. Arthur Hooks, M. D., Bristol, Va.-Tenn. 211

Tonsillar Hemorrhage. L. Leroy Jones, M. D., Portsmouth, Va. 214

Cesarean Section—Its Indications and Limitations. R. P. Kelly, M. D., Lynchburg, Va. 215

Program for Malaria Control in Virginia. Roy K. Flannagan, M. D., Richmond, Va. 219

Tumors of the Mammary Gland. Numa D. Bitting, M. D., F. A. C. S., Durham, N. C. 222

CORRESPONDENCE 223

THE TRUTH ABOUT MEDICINE 225

PROCEEDINGS OF SOCIETIES 226

SECRETARY'S ANNOUNCEMENT 228

BOOK ANNOUNCEMENTS 229

EDITORIAL 230

NEWS NOTES 232

OBITUARY 236

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

CREOSOTE EFFECT

free from the disagreeable effects on the stomach may be obtained by administering CALCREOSE (Calcium creosotate), a mixture containing in loose chemical combination approximately equal weights of creosote and lime.

Write for "*The Calcreose Detail Man*"

SAMPLES

THE MALTBIE CHEMICAL CO., Newark, New Jersey

Norfolk

for the

Fifty-Third Annual Meeting

of the

Medical Society of Virginia

October 31 - November 3

1922

Dr. R. Lloyd Williams, Chairman

Local Committee of Arrangements

405 Taylor Building

Will give any information and make reservations for doctors contemplating attending the meeting

THYROXIN

Prepared only by E. R. SQUIBB & SONS

Under License of the

University of Minnesota

PURE, crystalline Thyroxin is the physiologically active constituent of the thyroid gland; a compound of definite and known chemical composition containing 65 per cent. of iodine, organically combined, as an integral part of the molecule.

Fifteen grains of desiccated thyroid prepared under favorable conditions contains approximately 1/64 grain of Thyroxin. This ratio may be used in determining the initial dose of Thyroxin.

The physiological action of Thyroxin bears a quantitative relation to the production of body energy, and a system that is lacking in such energy may be brought up to normal production by its administration.

Thyroxin is marketed in two forms—Tablets containing the partially purified sodium salt of Thyroxin for oral administration; and the Pure Crystalline Thyroxin for intravenous injection in those cases in which the Thyroxin is not absorbed quantitatively when given by mouth.

Complete Information on Request.

E·R·SQUIBB & SONS, NEW YORK

MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.

RELIABILITY
UNIFORMITY
PURITY
EFFICACY
E. R. SQUIBB & SONS

Men Who Know

—will point you to *Berry's* for real worth while clothing—the Virgin Wool, hand-tailored sort.

Made in our own New York shops for our own particular trade.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va.

"Safest For Trusts'

[WALTER REED MEDICAL SOCIETY NUMBER]

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., Oct. 31-Nov. ,3 1922

Vol. 49, No. 5
WHOLE NO. 842

RICHMOND, VA., AUGUST, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

The After-Care of Abdominal Surgical Patients. O. T. Amory, M. D. Newport News. Va. 237

Organization and Functioning of the Medical Department of a Division. George Peed, Lt. Col., M. C., U. S. A., Fotress Monroe, Va. 240

The Relation Between the Dentist and the Physician. Frank Logan, D. D. S., Newport News, Va. 244

Physiological Rest to the Large Bowel by Surgical Intervention. R. L. Payne, M. D., Norfolk, Va. 246

The First Aid to the Injured Eye. Clarence Porter Jones, M. D., F. A. C. S., Newport News, Va. 249

Arteriosclerosis. Thomas M. Wood, National Soldiers' Home, Hampton, Va. 250

The Laboratory as an Aid to Diagnosis. M. B. Beecroft, M. D., Newport News, Va. 251

Artifical Feeding of Infants. J. Wilton Hope, M. D., Hampton, Va. 256

The Co-Operation of the Physician in Preventive Dentistry. E. J. Applewhite, D. D. S., Newport News, Va. 258

Congenital Pyloric Stenosis. G. K. Vanderslice, M. D., and G. G. Hankins, M. D., Phoebus, Va. 263

The Effect of our Modern Women Upon the Future Generation. W. W. Kerns, M. D., Bloxom, Va. 265

The Diagnosis of Pulmonary Tuberculosis. H. G. Longaker, M. D., Newport News, Va. 266

The Diagnosis and Treatment of Neurosyphilis. Charles M. Byrnes, M. D., Baltimore, Md. 269

X-ray as an Aid to Diagnosis. R. A Davis, M. D., Newport News, Va. 276

The Interpretation of Cardiac Irregularities. J. Morrison Hutcheson, M. D., Richmond, Virginia 279

Focal Infection and its Relation to Obstetrics. Samuel Downing, M. D., Newport News, Va. 282

The Necessity for the Determination of the Origin of Jaundice Before Surgical Treatment. D. W. and Ernest S. Bullock, M. D., and R. H. Davis, M. D., Wilmington, North Carolina. 284

ANALYSES, SELECTIONS, ETC. 285

PROCEEDINGS OF SOCIETIES 287

SECRETARY'S ANNOUNCEMENT 288

THE TRUTH ABOUT MEDICINE 288

BOOK ANNOUNCEMENTS 288

EDITORIAL 291

NEWS NOTES 293

OBITUARY 299

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

CREOSOTE EFFECT

free from the disagreeable effects on the stomach may be obtained by administering CALCREOSE (Calcium creosotate), a mixture containing in loose chemical combination approximately equal weights of creosote and lime.

Write for "*The Calcreose Detail Man*"

SAMPLES

THE MALTBIE CHEMICAL CO., Newark, New Jerse

Norfolk

for the

Fifty-Third Annual Meeting

of the

Medical Society of Virginia

October 31 - November 3

1922

Dr. R. Lloyd Williams, Chairman

Local Committee of Arrangements

405 Taylor Building

Will give any information and make reservations for doctors contemplating attending the meeting

You do not speculate when you buy an investment bond

The interest rate on a bond is fixed and the ultimate payment of the principal is secured.

In the case of a Municipal bond, which is the obligation of a city, county or town in one of the States of the Union, the security behind the bond is the taxing power of the issuing municipality.

In the case of the Corporation bond, the security is a direct mortgage on actual property owned by the company. The corporation must pay interest on its bonds before declaring dividends on its stock issues.

Consequently a good sound bond is desirable as an investment for your savings because it means fundamental security and an assured, regular income of from approximately six to seven per cent.

Savings Banks, Life Insurance Companies, Trustees of estates and large investors, buy investment bonds because they combine high return with safety of principal. An increasing number of persons who heretofore have never purchased bonds are turning their attention to this method of investment.

Probably not again in this generation will good investment bonds offer such opportunities as at present. We will gladly mail you a list of sound investment bonds upon request.

E. H. Rollins & Sons

BOSTON
200 Devonshire St.

NEW YORK
43 Exchange Pl.

PHILADELPHIA
1421 Chestnut St.

CHICAGO
111 W. Jackson St.

SAN FRANCISCO
300 Montgomery St.

DENVER
315 International Tr. Bldg.

LOS ANGELES
203 Security Bldg.

COME HERE

Berry Clothes of Custom Quality Await You. You Pay No More.

The best of everything men and boys wear.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., Oct. 31-Nov. 3, 1922

Vol. 49, No. 6.
WHOLE No. 813

RICHMOND, VA., SEPTEMBER, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

The Correction of Facial Defects with Special Reference to Nutrition of the Skin Flaps and Planning of the Repair. C. C. Coleman, M. D., F. A. C. S., Richmond, Va. 301

Some Remarks About Cataract. Jos. A. White, M. D., Richmond, Va. 306

Remarks on Railway Industrial Surgery. E. L. Kendig, M. D., Victoria, Va. 311

The Relation of Age to Disease in Childhood. Wingate M. Johnson, M. D., Winston-Salem, N. C. 313

Diseases Associated with Protein Sensitization. Warren T. Vaughan, M. D., Richmond, Va. 316

The Development of Public Health Activities in Rural Districts. W. F. Draper, U. S. Public Health Service. 322

Maxwell Antrum Punch. G. Madison Maxwell, M. D., Roanoke, Va. 324

Moral Conditions of the Present Day. Edwin M. Mann, M. D., Kenbridge, Va. 325

Gastro-Intestinal Disorders of Infants. Russell M. Cox, M. D., Portsmouth, Va. 327

The Management of Convergent Strabismus. V. M. Hicks, M. D., Raleigh, N. C. 332

Dentistry from the View-point of the Neurologist. Jas. K. Hall, M. D., Richmond, Va. 335

Report of Two Cases of Syphilis of the Eighth Nerve and Inner Ear. E. G. Gill, M. D., Roanoke, Va. 337

Some Modern Views of Cancers. Charles Minor Blackford, M. D., Staunton, Va. 339

Unusual Appearance of a Bullet Wound. James M. Whitfield, M. D., Richmond, Va. 342

Successful Heterogenous Testicular Transplantation in Man. Max Thorek, M. D., Chicago, Ill. 343

Syphilis of the Lung with Report of a case. Allen T. Hawthorne, M. D., Harrisonburg, Va. 345

Optometry—Its Limitations and Dangers. Hunter H. McGuire, M. D., Winchester, Va. 348

Historical Note on Appendicitis. B. M. Randolph, M. D., Washington, D. C. 351

THE TRUTH ABOUT MEDICINE 352

BOOK ANNOUNCEMENTS 352

EDITORIAL 353

NEWS NOTES 354

OBITUARY 362

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

IN PULMONARY TUBERCULOSIS

CREOSOTE EFFECT MAY BE OBTAINED WITHOUT UNTOWARD SYMPTOMS on the gastro-intestinal tract; no nausea, vomiting, gastric distress or irritability by using

CALCREOSE (Calcium creosotate), a mixture containing in loose chemical combination, approximately equal weights of creosote and lime. Patients do not object to taking CALCREOSE, even in large doses for long periods of time.

Write for "The Calcreose Detail Man."

THE MALTBIE CHEMICAL CO., Newark, New Jersey

Norfolk

for the

Fifty-Third Annual Meeting

of the

Medical Society of Virginia

October 31 - November 3

1922

Dr. R. Lloyd Williams, Chairman

Local Committee of Arrangements

405 Taylor Building

Will give any information and make reservations for doctors contemplating attending the meeting

Money Doubles

in twelve years if invested at 6% with interest compounded.

If your surplus money is not invested or is not earning a fair rate of interest, that money is not of full value to you.

One of the simplest and most profitable forms of investment is in well-secured bonds issued by Governments and Municipalities, or by prosperous and growing corporations.

This type of investment requires almost no personal attention. The income is available in convenient form and principal is readily accessible should occasion require.

The services of our organization are offered to you in the selection of bonds. We are not brokers, but merchants of securities, purchasing outright, only after careful investigation, the bonds we offer; consequently, we must be *absolutely sure* as to the value of the security.

We shall be glad to serve you by suggestions or recommendations. If agreeable, we would like to include your name among those to whom we make regular offerings of bonds. We invite your inquiry.

E. H. Rollins & Sons

BOSTON
200 Devonshire St.

NEW YORK
43 Exchange Pl.

PHILADELPHIA
1421 Chestnut St.

CHICAGO
111 W. Jackson St.

SAN FRANCISCO
300 Montgomery St.

DENVER
315 International Tr. Bldg.

LOS ANGELES
203 Security Bldg.

COME HERE

Berry Clothes of Custom Quality Await You. You Pay No More.

The best of everything men and boys wear.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidenially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Fifty-third Annual Session, Norfolk, Va., Oct. 31-Nov. 3, 1922

Vol. 49, No. 7.
WHOLE No. 844

RICHMOND, VA., OCTOBER, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Report of a Case of Ectopic Kidney. Robert C. Bryan, M. D., F. A. C. S., Richmond, Va. 363

The Richmond Pelvis. M. Pierce Rucker, M. D., Richmond, Va. 370

The Report of a Case of Rapid Sinus Thrombosis Complicating Acute Mastoiditis; with Remarks on Involvement of the Torcular Region. John Randolph Page, M. D., New York 378

Malignant Tricuspid Endocarditis With Probable Banti's Disease. A Case Report. W. M. Sheppe, M. D., University, Va. 380

Acute Pancreatitis. A Case Report. Arthur S. Brinkley, M. D., Richmond, Va. 388

Local Treatment of Eczema. James W. Anderson, M. D., Norfolk, Va. 390

Control of Hemorrhage in Tonsillectomy. Clifton M. Miller, M. D., F. A. C. S., Richmond, Va. 391

Vaginitis Due to Trichomonas Vaginalis. Howard F. Kane, A. B., M. D., F. A. C. S., Washington, D. C. 393

Pelvic Pathology and the Cardio Vascular System. Wm. Edgar Darnall, A. M., M. D., F. A. C. S., Atlantic City, N. J. 395

The Neglected Latent Faculty. Stephen Harnsberger, M. D., Warrenton, Va. 397

Management of Breech Cases of Labor. Jeter R. Allen, M. D., Marshall, Va. 403

Notes on Rectal Surgery. E. H. Terrell, M. D., Richmond, Va. 405

ANALYSES, SELECTIONS, ETC. 405
PROCEEDINGS OF SOCIETIES 408
CORRESPONDENCE 412
SECRETARY'S ANNOUNCEMENT 412
THE TRUTH ABOUT MEDICINE 413
BOOK ANNOUNCEMENTS 413
EDITORIAL 415
NEWS NOTES 417
OBITUARY 423

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

IN PULMONARY TUBERCULOSIS

CREOSOTE EFFECT MAY BE OBTAINED WITHOUT UNTOWARD SYMPTOMS on the gastro-intestinal tract; no nausea, vomiting, gastric distress or irritability by using

CALCREOSE (Calcium creosotate), a mixture containing in loose chemical combination, approximately equal weights of creosote and lime. Patients do not object to taking CALCREOSE, even in large doses for long periods of time.

Write for "The Calcreose Detail Man."

THE MALTBIE CHEMICAL CO., Newark, New Jersey

Norfolk

for the

Fifty-Third Annual Meeting

of the

Medical Society of Virginia

October 31 - November 3

1922

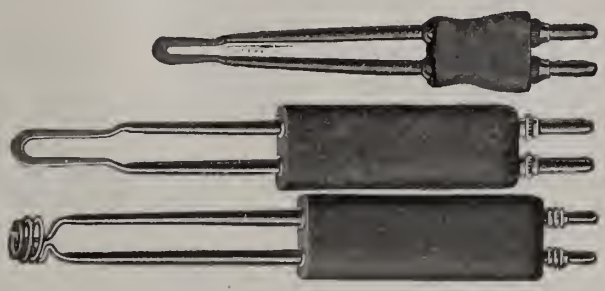
Dr. R. Lloyd Williams, Chairman

Local Committee of Arrangements

405 Taylor Building

Will give any information and make reservations for doctors contemplating attending the meeting

DOWNES' CAUTERY TRANSFORMERS
FOR ALTERNATING CURRENT



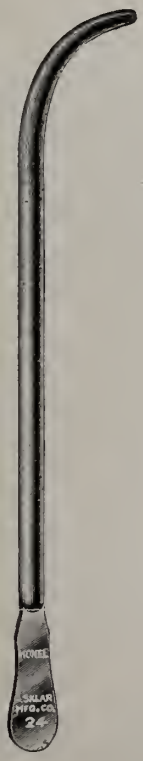
Price complete with 3 knives and heavy aseptic cautery cable.
$65.00

THE Transformer has been designed to supply the needs of physicians who demand a convenient and portable controller. It is mounted in a polished mahogany carrying case, size 7x7x5 inches. The platform is of polished marble, upon which is mounted the indicating switch and terminal posts. The heat of the cautery knife is regulated by turning the handle on top of the instrument. The index indicates the amount of the secondary coil exposed to the primary coil. With this adjustment, from the smallest to the largest knives made can be heated with perfect ease. The maximum output of this apparatus is 4 volts and 100 amperes.

These knives are made of nickel, mounted on heavy copper stems, with aseptic mineral handles which can be boiled, indefinitely without injury

Powers and Anderson, Inc.

603 E. Main Street **Richmond, Va.**



We can now furnish Van Buren Sounds in Monel Metal

Will Not Rust
Will Not Stain
Smoother Than Steel
Non-Corrosive

Never have to be plated
Last a lifetime
Sizes from 10 to 36
Price $2.00 Each

POWERS & ANDERSON SURG. INST. CO., INC.

Physicians and Hospital Supplies

2 ARCADE BUILDING, **NORFOLK, VA.**

SUMMER WEARABLES

Berry Tropical and Palm Beach Suits are tailored to look good as well as give comfort.

No uncertainties here—the *Berry Label* guarantees.
$17.50 and up.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 **Surplus Earned $900,000**

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK
11th & Main Sts. Richmond, Va

"Safest For Trusts'

Medical Association of Valley of Virginia Number

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 49, No. 8
WHOLE NO. 845

RICHMOND, VA., NOVEMBER, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Recent Views of Some Ductless Glands. Charles Minor Blackford, M. D., Staunton, Va. 425
Pneumonia in Infancy. G. S. Hartley, M. D., Clifton Forge, Va. 430
Peptic Ulcer. J. A. Riffe, M. D., Covington, Va. 433
Congenital Hypertrophic Pyloric Stenosis. By J. M. Emmett, M. D., Clifton Forge, Va. 437
The Practice of Medicine for Forty Years. W. H. F. Miller, M. D., Clifton Forge, Va. 440
Tetanus. Lanier D. Pole, M. D., Hot Springs, Va. 443
Roentgenology in its Relation to the General Practitioner. W. M. Phelps, M. D., Colonel M. R. C., U. S. Army, Staunton, Va. 444
Acute Infective Osteomyelitis With Report of Cases. M. J. Payne, M. D., F. A. C. S., Staunton, Va. 446
Speculations Concerning the Genesis of Neoplastic Diseases. C. O. Miller, M. D., New Market, Va. 450
Remarks on Perineal Lacerations. W. Dennis Kendig, M. D., Kenbridge, Va. 454
Compound Fracture of the Elbow Joint. A Case Report. Chas M. Hazen, M. D., Richmond, Va. 457
The Toxicity of Apinol. Chas. C. Haskell, W. R. Gardner, and S. P. Hileman, Richmond, Va. 459
Report of a Case of Hydatidiform Mole. J. L. Rawls, M. D., Norfolk, Va. 462
Prophylaxis in Acute Tympanic Diseases. J. Warren White, A. B., M. D., Norfolk, Virginia 464
Co-operation Between Internist and Dentist. Warren T. Vaughan, M. D., Richmond, Va. 465
Diagnosis and X-ray Treatment of Toxic Goiter With Report of Five Cases. W. E. Killinger, A. B., M. D., Victoria, Va. 469
The Waring Suction Tonsllectomy. J. B. H. Waring, M. D., Blanchester, Ohio. 472
Wire Ring in Esophagus: Removal. Elbyrne G. Gill, Roanoke, Virginia. 474
Prostatectomy: A Report of Cases, With Special Reference to Pre-Operative and Post-Operative Treatment. Austin I. Dodson, M. D., Richmond, Va. 475
BOOK ANNOUNCEMENTS 477
EDITORIAL 478
NEWS NOTES 482
OBITUARY 486

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5

CALCREOSE

IN PULMONARY TUBERCULOSIS

CREOSOTE EFFECT MAY BE OBTAINED WITHOUT UNTOWARD SYMPTOMS on the gastro-intestinal tract; no nausea, vomiting, gastric distress or irritability by using

CALCREOSE (Calcium creosotate), a mixture containing in loose chemical combination, approximately equal weights of creosote and lime. Patients do not object to taking CALCREOSE, even in large doses for long periods of time.

Write for "The Calcreose Detail Man."

THE MALTBIE CHEMICAL CO., Newark, New Jersey

THE JEFFERSON

The Jefferson

RICHMOND, VA.

EUROPEAN PLAN.

Ideally situated in the most desirable section of Richmond and within five minutes walk of the business center and shopping district.

400 ROOMS—300 BATHS.

Every comfort for the tourist. Every convenience for the traveling man. Rooms single and en suite. Turkish and Roman Baths. Spacious sample rooms.

Rates $2.00 per day and upwards.

O. F. WEISIGER, Manager.

THIS SPACE RESERVED FOR

MURPHY'S HOTEL

8TH AND BROAD STREETS
RICHMOND, VA.

The Largest and Most Distinctive Hotel in Virginia

RATES REASONABLE
SERVICE UNEXCELLED

JAS. T. DISNEY, President and Manager

Hotel Richmond

300 Rooms, Fireproof,
Overlooking Capitol Park

In Center of Business and Amusements

HOTEL RICHMOND REALTY CORP.
Owners

W. E. Hockett, Manager

Loyalty to our doctors

When we select a doctor to practice upon ourselves and our families we are governed by his professional ability and his general character as a gentleman. We then put our lives in his hands and look to him for results.

We put our faith in him and stick to him. Should our case be serious and he thinks we should have additional service we expect him to suggest it.

Now doctor when your patients need a wheel chair, commode, bedtable or a comfortable chair or a hospital bed, why not suggest it to them and be sure to say you can find it at

SYDNOR & HUNDLEY, Richmond, Va.

Virginia Engraving Co., Inc.
Photo Engravers
Richmond, Va.

Commercial drawings, half-tones and line cuts for all purposes.

ENGRAVERS FOR THIS JOURNAL

Your Prescriptions for Glasses Should be Filled

Hall's Way

REALLY IT'S THE BEST WAY

211 E. Broad St.
and
503 E. Franklin St.
(Professional Bldg.)
Richmond, Va.

G·L· Hall
OPTICAL CO. INC.

144-146 Granby St.
112 W. Plume St.
122 Randolph St.
Norfolk, Va.

THE LARGEST AND BEST KNOWN OPTICAL AND KODAC HOUSE IN THE ENTIRE SOUTH.

SPECIALISTS IN
X-Ray Plates, Powders, Etc.
Dental Film
Buck's X-Ograph Film
Dental Mounts
Photographic Chemicals, Etc.

GRINDERS OF
Ultex Lenses
Kryptok Lenses
Toric Lenses
Tinted Lenses, Etc.

SPECTACLES
EYEGLASSES
Artificial Eyes

KODAKS
SUPPLIES
FINISHING

The S. Galeski Optical Co.

LEADING—LARGEST—OLDEST
OPTICAL HOUSE SOUTH

RICHMOND
Main and 8th Streets
223 E. Broad St.

NORFOLK
209 Granby Street

ROANOKE
211 S. Jefferson Street

DANVILLE
520 Main Street

℞ WORK
OUR
SPECIALTY

OPHTHALMO-
LOGICAL
SUPPLIES

SUMMER WEARABLES

Berry Tropical and Palm Beach Suits are tailored to look good as well as give comfort.

No uncertainties here—the *Berry Label* guarantees.
$17.50 and up.

Main at Eleventh

O. H. Berry & Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK
11th & Main Sts. Richmond, Va

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 49, No. 9
WHOLE No. 846

RICHMOND, VA., DECEMBER, 1922

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

President's Address. E. C. S. Taliaferro, M. D., F. A. C. S., Norfolk, Va. 487

A Consideration of Deficiency Diseases: Diseases Resulting From Faulty Diets. Joseph Goldberger, Surgeon, U. S. Public Health Service, Washington, D. C. 489

Pediatric Aspects of Nutritional Diseases. Lawrence T. Royster, M. D., Norfolk, Va 494

Orthopaedic Aspects of Nutritional Diseases. Thomas Wheeldon, A. M., M. D., and John Blair Fitts, A. B., M. D., Richmond, Va. 498

Neurological Aspects of Nutritional Diseases. Frank H. Redwood, M. D., Norfolk, Va. 503

Cutaneous Aspects of Nutritional Diseases. Thomas W. Murrell, M. D., Richmond, Va. 505

Certain Aspects of Medical Education. Theodore Hough, University, Va. 509

Observations on Diphtheria in Virginia. A. H. Straus, Richmond, Va. 513

Changes in a Small Town Brought About by the Health Department. B. B. Bagby, M. D., West Point, Va. ... 517

The Layman in Public Health. Roy K. Flannagan, M. D., Richmond, Va. 519

Oxygen Supply and Demand in General Anesthesia. Robert Camden Whitehead, M. D., Norfolk, Va. 523

Spondylitis Deformans (Marie-Strumpell Type.) Allen F. Voshell, M. D., University, Va. 525

Some Comments on the Subject of Vertigo. John Dunn, M. D., Richmond, Va. 528

Etiology, Diagnosis and Treatment of Chronic Gastric and Duodenal Ulcer. P. S. Smith, M. D., Abingdon, Va. 532

Surgical Treatment of Chronic Gastric and Duodenal Ulcer. Alfred P. Jones, M. D., Roanoke, Va. 537

X-Ray Phases of Chronic Gastric and Duodenal Ulcer. J. F. Armentrout, M. D., Roanoke, Va. 539

Notes on Rectal Surgery. E. H. Terrell, M. D., Richmond, Va 540

CORRESPONDENCE 540

PROCEEDINGS OF SOCIETIES 540

THE TRUTH ABOUT MEDICINE 545

BOOK ANNOUNCEMENTS 547

EDITORIAL 549

NEWS NOTES 551

OBITUARY 556

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

IN PULMONARY TUBERCULOSIS

CREOSOTE EFFECT MAY BE OBTAINED WITHOUT UNTOWARD SYMPTOMS on the gastro-intestinal tract; no nausea, vomiting, gastric distress or irritability by using

CALCREOSE (Calcium creosotate), a mixture containing in loose chemical combination, approximately equal weights of creosote and lime. Patients do not object to taking CALCREOSE, even in large doses for long periods of time.

Write for "The Calcreose Detail Man."

THE MALTBIE CHEMICAL CO., Newark, New Jersey

Bonds of Hydro-Electric Power Companies

With Public Utilities furnishing electric power for lighting, commercial and other purposes, there are two methods used in generating the power, one being a manufactured force, usually steam, the other a natural force, water.

The advantages of using water instead of steam may readily be seen.

With the steam plant, coal and other material must be used, and the prices of these commodities fluctuate; with increased prices naturally the cost of production is increased.

By the use of water, the force is supplied and replenished by Nature with but the slightest dependence upon material and its cost. Furthermore, to operate a hydro-electric property but few men are required, and this to a large degree eliminates the labor factor, which under existing economic circumstances is a very important item to be considered.

The hydro-electric power company furnishes a service essential to the progressive community. Low overhead expense, low capital requirements, minimum dependence upon human labor and unbroken records of growth in earnings over long periods of time are some of the factors which insure the stability of its bonds.

Should you care to consider such issues for investment of your surplus funds, we shall be glad to make specific offerings upon request.

E. H. Rollins & Sons

BOSTON
200 Devonshire St.

NEW YORK
43 Exchange Pl.

PHILADELPHIA
1421 Chestnut St.

CHICAGO
111 W. Jackson St.

SAN FRANCISCO
300 Montgomery St.

DENVER
315 International Tr. Bldg.

LOS ANGELES
203 Security Bldg.

IMPORTANT

During the late winter and early spring months, the activity and normal functioning of the Thyroid gland are at their lowest ebb, and the production of the active constituent is almost entirely suspended. It is during this season that the greatest need for thyroidal preparations of definite value exists.

Thyroxin

Prepared only by E. R. Squibb & Sons
under license of the University
of Minnesota

PURE crystalline Thyroxin is the physiologically active constituent of the thyroid gland; a compound of definite and known chemical composition containing 65% of iodine, organically combined as an integral part of the molecule.

Fifteen grains of desiccated thyroid prepared under favorable conditions contains approximately 1/64 grains of Thyroxin. This ratio may be used in determining the initial dose of Thyroxin.

The physiological action of Thyroxin bears a quantitative relation to the production of body energy, and a system that is lacking in such energy may be brought up to normal production by its administration.

Thyroxin is marketed in two forms—Tablets containing the partially purified sodium salt of Thyroxin, for oral administration; and the Pure Crystalline Thyroxin, for intravenous injection in those cases in which the Thyroxin is not absorbed quantitatively when given by mouth.

Complete information on request

E·R·SQUIBB & SONS·NEW YORK
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858

"HURRY, PLEASE"

A Doctor often gets this summons. Sometimes its in the dead of night—a cold one!

Keep a BERRY OVERCOAT handy. A Great Coat for cold nights; A Top Coat for the year 'round.

The Best Ones Are Here.

Main at Eleventh — O. N. Berry Co. — ESTABLISHED 1879 — RICHMOND, VA. — Main at Eleventh

---

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 49, No. 10
WHOLE No. 847

RICHMOND, VA., JANUARY, 1923

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Focal Infection in Chronic and Recurring Disease. By Charles H. Mayo, M. D., Rochester Minnesota 557

The Tuberculosis Problem and the Negro. By H. R. M. Landis, M. D., Philadelphia, Pa. 561

Tuberculosis in Rural Virginia. By H. R. Edwards, M. D., Richmond, Va. 566

Is Progress Being Made in the Surgical Treatment of Actue Abdominal Conditions? By A. Murat Willis, M. D., Richmond, Va. 573

The Forces Which Prevent Modern Medicine From Being A Success. By A. A. Houser, M. D., Richmond, Va. 578

Regional Anaesthesia. By Southgate Leigh, M. D., F. A. C. S., and James H. Culpepper, M. D., F. A. C. S. 581

Report of a Case of Pulmonary Abscess of Lower Right Lobe Treated by Artificial Pneumothorax. By C. L. Harrell, M. D., Norfolk, Va. 585

Where Can We Find our Cases of Incipient Tuberculosis? By Charles R. Grandy, M. D., Norfolk, Va. 586

Notes on the Therapeutic Use of Bacillus Acidophilus Milk in Richmond. By George F. Reddish, Ph. D., and E. C. L. Miller, M. D., Richmond, Va. 590

Treatment of Eclampsia. By J. L. Early, M. D., Saltville, Va. 595

Relation of a Medical Examiner to a Life Insurance Company. By J. H. Dunkley, M. D., Roanoke, Va. 599

Prevalence of Unsuspected Chronic Maxillary Sinus Infection. By E. Trible Gatewood, M. D., Richmond, Va. 601

CORRESPONDENCE 604

ANALYSES, SELECTIONS, ECT. 606

PROCEEDINGS OF SOCIETIES 609

THE TRUTH ABOUT MEDICINE 613

EDITORIAL 614

NEWS NOTES 618

OBITUARY 623

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

In inflammation of the respiratory tract, especially in **Bronchitis**

CALCREOSE (calcium creosotate) a mixture containing in loose chemical combination, approximately equal weights of creosote and lime, is of value.

CALCREOSE differs from creosote in that it does not have any untoward effect on the stomach; hence patients do not object to its administration. **CALCREOSE** lessens cough and expectoration, and acts as an intestinal antiseptic, which is of value in treating the bronchitis associated with pulmonary tuberculosis.

POWDER SOLUTION TABLETS

Literature and samples on request

THE MALTBIE CHEMICAL COMPANY, NEWARK, NEW JERSEY

GOLDEN ANNIVERSARY

WITH THE PASSING of 1922 this institution rounds out half a century of First Mortgage Investment service in the nation's capital. During these fifty years no investor in its Safeguarded First Mortgages has ever suffered a loss.

Write for our Anniversary booklet

The F.H.SMITH COMPANY
Founded 1873
FIRST MORTGAGE INVESTMENTS
WASHINGTON, D. C.

THROMBOPLASTIN is neither a secret nor patented preparation.

It was inspired by authoritative investigators of the phenomena of blood clotting.

According to the theory of Howell, the chief role is to neutralize *antithrombin,* and thus allow *prothrombin* in the presence of calcium to form the fibrin ferment, *thrombin,* which in turn converts soluble *fibrinogen* into insoluble *fibrin,* the clot.

Thromboplastin Squibb

IN hemophilia, hemorrhage following tonsillectomy and surgical operations of the nose, brain, and abdominal organs; in uterine hemorrhage, obscure or internal hemorrhage, pulmonary hemorrhage, and after the excision of hemorrhoids and the extraction of teeth, in fact, in all hemorrhage where ligation is not possible or desirable, Thromboplastin Squibb is the agent of choice.

Delayed coagulation results from deficiency of any of the essential factors in clot formation. The lipoid substances of brain extract have been conclusively shown to correct such deficiencies by Dr. Alfred F. Hess of the Research Laboratory of the New York City Department of Health, and to cause normal clotting in from 20 to 60 seconds, thus confirming the findings of Howell and of Hirschfelder.

Thromboplastin Squibb is a true physiologic hemostatic reported by competent authorities to possess a median efficiency three to seven times that of other physiologic hemostatics. Supplied in 20 Cc. vials in two forms, Local and Hypodermic.

Literature and Samples Sent Upon Request.

E.R. SQUIBB & SONS, NEW YORK
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.

COUPON (2)

E. R. SQUIBB & SONS, 80 Beekman St., N. Y.
Kindly send me sample of THROMBOPLASTIN SQUIBB.

Name .....
Street .....
State .....

"HURRY, PLEASE"

A Doctor often gets this summons. Sometimes its in the dead of night—a cold one!

Keep a BERRY OVERCOAT handy—A Great Coat for cold nights; A Top Coat for the year 'round.

The Best Ones Are Here.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 49, No. 11
WHOLE No. 848

RICHMOND, VA., FEBRUARY, 1923

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Concerning Ocular Examinations in Their Relation to General Medical and Surgical Investigations. G. E. de Schweinitz, M. D., Philadephia, Pa. 625

The Diagnosis of Brain Tumor. Beverley R. Tucker, M. D, Richmond, Va. 628

The Importance of Ophthalmology and Otology in the Location of Intracranial Growths. John Dunn, M. D., Richmond, Va. 633

Visual Disturbances in Brain Tumors. Emory Hill, M. D., Richmond, Va. 636

X-Ray Examinations in Cases of Brain Tumor. Daniel D. Talley, Jr., B. A., M. D., Richmond, Va. 639

Some Points in the Treatment of Tumor of the Brain. C. C. Coleman, M. D., F. A. C. S., Richmond, Va. 641

The Difficulties Encountered in the Diagnosis of Tuberculosis in Children. R. C. Carnal, M. D., Rochester, N. Y. 644

Pneumonoconiosis: Reports of Cases. Alfred L. Gray, M. D. and J. Lloyd Tabb, M. D., Richmond Va. 647

Report of a Case of Typhoid Fever, with Perforation, also some General Observations on Typhoid Perforation. R. M. Wiley, M. D., Salem, Va. 649

Splenectomy in the Treatment of Splenic Anemia. Edmund J. Horgan, M. D., F. A. C. S., Washington, D. C. 652

On the Management of Urological Cases. Joseph F. Geisinger, M. D., Richmond, Va. 656

The Relation Between Syphilis and Diabetes Mellitus. James H. Smith, M. D., Richmond, Va. 662

A Case of Traumatic Asphyxia. C. S. Lawrence, M. D., Winston-Salem, N. C. 664

Obstetric Statistics. M. Pierce Rucker, M. D., Richmond Va. 665

The Neglected Latent Faculty. Wm. Joseph Jones, M. D., Crozet, Va. 670

The Wail of the Young. Stephen Harnsberger, M. D., Warrenton, Va. 672

PROCEEDINGS OF SOCIETIES. 675

ANALYSES, SELECTIONS, ETC.: 677

THE TRUTH ABOUT MEDICINE 679

BOOK ANNOUNCEMENTS 680

EDITORIAL 681

NEWS NOTES 684

OBITUARY 691

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

In inflammation of the respiratory tract, especially in **Bronchitis**

CALCREOSE (calcium creosotate) a mixture containing in loose chemical combination, approximately equal weights of creosote and lime, is of value.

CALCREOSE differs from creosote in that it does not have any untoward effect on the stomach; hence patients do not object to its administration. **CALCREOSE** lessens cough and expectoration, and acts as an intestinal antiseptic, which is of value in treating the bronchitis associated with pulmonary tuberculosis.

POWDER SOLUTION TABLETS

Literature and samples on request

THE MALTBIE CHEMICAL COMPANY, NEWARK, NEW JERSEY

FIFTY YEARS OF SAFETY
in the Nation's Capital

HALF a century ago—in 1873—F. H. Smith founded the First Mortgage Investment business which to this day has a record of *no loss to any investor.*

Consider this record carefully when you have funds to invest. Consider also these additional advantages of The F. H. Smith Company's First Mortgage offerings:

1 Secured by improved, income-producing property in Washington, D. C.

2 An attractive interest return—6½% net.

3 Federal and State tax-refund features which bring the yield in many instances above 7%.

4 Your choice of maturities ranging from 2 years to 12 years.

5 Denominations of $1,000, $500 and $100.

6 A strong investment savings plan which enables you to receive the first mortgage interest rate on *every* partial payment.

Write today for booklet No. 8

The F. H. SMITH COMPANY

Founded 1873

FIRST MORTGAGE INVESTMENTS

WASHINGTON, D. C.

THROMBOPLASTIN is neither a secret nor patented preparation.

It was inspired by authoritative investigators of the phenomena of blood clotting.

According to the theory of Howell, the chief role is to neutralize *antithrombin*, and thus allow *prothrombin* in the presence of calcium to form the fibrin ferment, *thrombin*, which in turn converts soluble *fibrinogen* into insoluble *fibrin*, the clot.

Thromboplastin Squibb

IN hemophilia, hemorrhage following tonsillectomy and surgical operations of the nose, brain, and abdominal organs; in uterine hemorrhage, obscure or internal hemorrhage, pulmonary hemorrhage, and after the excision of hemorrhoids and the extraction of teeth, in fact, in all hemorrhage where ligation is not possible or desirable, Thromboplastin Squibb is the agent of choice.

Delayed coagulation results from deficiency of any of the essential factors in clot formation. The lipoid substances of brain extract have been conclusively shown to correct such deficiencies by Dr. Alfred F. Hess of the Research Laboratory of the New York City Department of Health, and to cause normal clotting in from 20 to 60 seconds, thus confirming the findings of Howell and of Hirschfelder.

Thromboplastin Squibb is a true physiologic hemostatic reported by competent authorities to possess a median efficiency three to seven times that of other physiologic hemostatics. Supplied in 20 Cc. vials in two forms, Local and Hypodermic.

Literature and Samples Sent Upon Request.

E·R·SQUIBB & SONS, NEW YORK
MANUFACTURING CHEMISTS TO THE MEDICAL PROFESSION SINCE 1858.

COUPON (9)

E. R. SQUIBB & SONS, 80 Beekman St., N. Y.
Kindly send me sample of THROMBOPLASTIN SQUIBB.

Name .....

Street .....

State .....

COME HERE

Berry Clothes of Custom Quality Await You. You Pay No More.

The best of everything men and boys wear.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va

"Safest For Trusts'

Virginia Medical Monthly

OFFICIAL ORGAN OF THE MEDICAL SOCIETY OF VIRGINIA

Vol. 49, No. 12.
WHOLE No. 849

RICHMOND, VA., MARCH, 1923

$2.00 A YEAR
20 CENTS A COPY

CONTENTS.

ORIGINAL COMMUNICATIONS:

Importance of Early Diagnosis of Acute Abdominal Pain. Joseph D. Rogers, M. D., Washington, D. C. ---- 693
Some Pediatric Practicalities. Sam Wilson, M. D., Lynchburg, Va. ---- 696
The Use of Dry Milk in Infant Feeding. William B. McIlwaine, M. D., Petersburg, Va. ---- 700
An Exanthem occurring in Infants, with unusual Symptomatology. Charles E. Conrad, M. D., Harrisonburg, Va. ---- 705
Balancing the Ration in severe Diabetes. Alexander G. Brown, Jr., A. B., M. D., Richmond, Va. ---- 706
The Value of Basal Metabolism Studies in Thyroid Disease. James H. Smith, M. D., Richmond, Va. ---- 708
Delayed Union in Non-Infected Wounds above the Umbilicus. Arthur S. Brinkley, M. D., Richmond, Va. ---- 711
Kidney Abscess and Pyonephrosis: Review of Cases. John H. Neff, M. D., University, Va. ---- 715
Prostatectomy, with Special Reference to the Perineal Route. J. Shelton Horsley, M. D., Richmond, Va. ---- 718
Some further Observation on Prostatectomy. Robert C. Bryan, M. D., F. A. C. S., Richmond, Va. ---- 721
Multiple Myeloma with Report of the Case. Julian L. Rawls, M. D., Norfolk, Va. ---- 723
An Unusual Case of Mastoiditis. Thos. E. Hughes, M. D., Richmond, Va. ---- 726
Electrocardiography in the Diagnosis of Cardiac Conditions. F. C. Rinker, A. B., M. D., Norfolk, Va. ---- 727
Papillary Cystadenoma of the Ovary. Jas. W. Gibbon, M. D., Charlotte, N. C. ---- 729
Time and Mortality. J. E. Rawls, A. B., M. D., F. A. C. S., Suffolk, Va. ---- 734

CORRESPONDENCE ---- 737
ANALYSES, SELECTIONS, ETC. ---- 738
THE TRUTH ABOUT MEDICINE ---- 739
BOOK ANNOUNCEMENTS ---- 740
EDITORIAL ---- 741
NEWS NOTES ---- 745
OBITUARY ---- 751

FOR MEDICAL SOCIETY ANNOUNCEMENTS SEE PAGE 4.

INDEX OF ADVERTISERS—Advertising Page 5.

CALCREOSE

In inflammation of the respiratory tract, especially in **Bronchitis**

CALCREOSE (calcium creosotate) a mixture containing in loose chemical combination, approximately equal weights of creosote and lime, is of value.

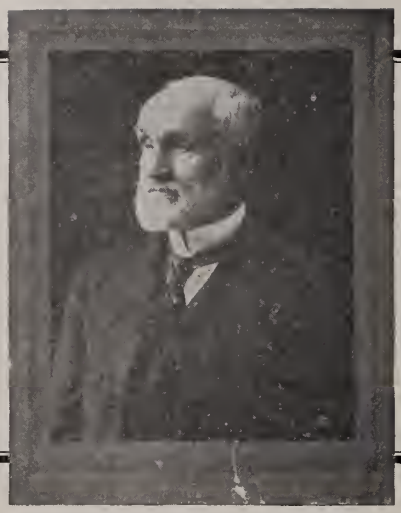
CALCREOSE differs from creosote in that it does not have any untoward effect on the stomach; hence patients do not object to its administration. **CALCREOSE** lessens cough and expectoration, and acts as an intestinal antiseptic, which is of value in treating the bronchitis associated with pulmonary tuberculosis.

POWDER SOLUTION TABLETS

Literature and samples on request

THE MALTBIE CHEMICAL COMPANY, NEWARK, NEW JERSEY

Fifty Years Ago this Man Learned the "Secret" of *Successful Investing*



Francis H. Smith: 1829-1906
Founder of The F. H. Smith Company

IN 1848 Francis H. Smith, then a youth of 19, set out barefoot from a farm near Washington, Conn., his birthplace, to walk to Washington, D. C. Twenty-five years later, at the age of 44, he founded the investment business that became one of the most important factors in the financial life of the Nation's Capital.

During the years when Washington was changing from a straggling, overgrown village to one of the wonder cities of the world, F. H. Smith was in intimate association with the Government officials who were responsible for this transformation. He knew Alexander R. Shepherd, to whom President Grant had entrusted the management of the City of Washington; he knew Grant, Garfield, Blaine, McKinley and the other outstanding figures of that period.

F. H. Smith not only witnessed the transformation of the Nation's Capital, but helped to bring that transformation about. He became **a pioneer in the real estate loan and investment business.** He saw that Washington was **a city of constantly increasing real estate values.** He saw that this would give First Mortgage investors **a constantly increasing margin of safety.**

What F. H. Smith learned in those years of Washington's transformation was the secret of investment success—**a success which was shared by every man and woman and every financial institution that came to him for first mortgage investments,** with the result that the house which he founded has today a record of **half a century without loss to any investor.**

FOUR SPECIAL FEATURES

1. Investors receive $6\frac{1}{2}\%$ *net* and are relieved of the 2% normal Federal income tax and of *any State tax* up to $5 per $1,000.
2. Denominations: $100, $500, $1,000 and $5,000. Maturities from 2 to 15 years.
3. A liberal Investment Savings Plan under which *all partial payments earn* $6\frac{1}{2}\%$.
4. The unqualified recommendation of a house which has back of it a record of *no loss to any investor in 50 years.*

Washington, the city of Government, the Mecca of patriotic tourists, the city of splendid buildings and countless memorials, is a bulwark of safety to conservative investors. It is **the one city in America which has back of it the tremendous power of the United States Government** in improvement and development. It is now, as it was 50 years ago, **a city of constantly increasing real estate values.**

The man or woman who invests in First Mortgages **strongly secured by new buildings located where real estate values are constantly increasing** has learned the secret of successful investment.

Let us send you a free copy of our Golden Anniversary booklet. It contains the illustrated story of F. H. Smith's remarkable career and of one of the most interesting periods in the Nation's Capital.

The F. H. Smith Company,
Washington, D. C.

Without any obligation on my part, you may send me your Golden Anniversary booklet, together with information about first mortgage investments in the Nation's Capital.

Name.....

8 *Street Address*.....

City.....

The F. H. SMITH CO.

Founded 1873

FIRST MORTGAGE INVESTMENTS
WASHINGTON, D. C.

NO LOSS TO ANY INVESTOR IN 50 YEARS

The Management of an Infant's Diet

Mellin's Food contains 58.88 per cent of Maltose
Mellin's Food contains 20.69 per cent of Dextrins

a proportion of

Maltose and Dextrins

best suited to the carbohydrate needs of the average baby.

Mellin's Food contains 10.35 per cent of Cereal Protein.

Mellin's Food contains 4.30 per cent of Salts which consist mainly of Potassium Salts, Phosphatic Salts, and a small amount of Iron.

These facts should be considered in selecting a modifier of milk for infant feeding and these facts point out some of the reasons for the success of Mellin's Food which probably is unparalleled in any decade since the beginning of the study of scientific infant feeding.

Mellin's Food Company, Boston, Mass.

Acute Respiratory Diseases offer an excellent opportunity to demonstrate the value of Therapeutic Immunization with Bacterial Vaccines

DATA FURNISHED ON REQUEST

Bacteriological Laboratories of
G. H. SHERMAN. M. D.
DETROIT

BETZCO SELECTED HARDWOOD APPLICATORS
Offer Safety and Convenience

Smoothex hardwood applicators are made from specially seasoned wood, strong and tough, but flexible. They are supplied in two standard lengths, 6 and 12 inches. You will find them of uniformly good quality and handily packed for instant use. 3CJ5 Hardwood Applicators, 12 inch, per bundle of 1,000, 85c; 3CJ6 Hardwood Applicators, 6 inches long, per bundle, 1,000, 65c.

Fill out and mail the Coupon

Frank S. Betz Co.
Hammond, Ind.

Enclosed is $1.50 for which send me 1 bundle each size of 3CJ5 and 3CJ6 applicators.

Name .....
Address .....
City ..... State .....

COME HERE

Berry Clothes of Custom Quality Await You. You Pay No More.

The best of everything men and boys wear.

Main at Eleventh

O. N. Berry Co.
ESTABLISHED 1879
RICHMOND, VA.

Main at Eleventh

Capital $1,000,000 Surplus Earned $900,000

ESTABLISHED 1892

For the express purpose of administering on Estates and the Protection of Trust Funds

Confidential Interviews and Correspondence Invited.

Say, Doctor---

you can talk to us entirely confidentially about your affairs. Come by and let us answer your questions and advise you about your will.

This bank has friends all over Virginia, many of whom have already seen us about their wills.

Write or phone for a special engagement with Mr. G. Jeter Jones, Vice President.

MERCHANTS NATIONAL BANK

11th & Main Sts. Richmond, Va

"Safest For Trusts'

The New York Academy of Medicine

THIS BOOK MUST NOT BE RETAINED FOR LONGER THAN ONE WEEK AFTER THE LAST DATE ON THE SLIP UNLESS PERMISSION FOR ITS RENEWAL BE OBTAINED FROM THE LIBRARY.

Je 14 '11